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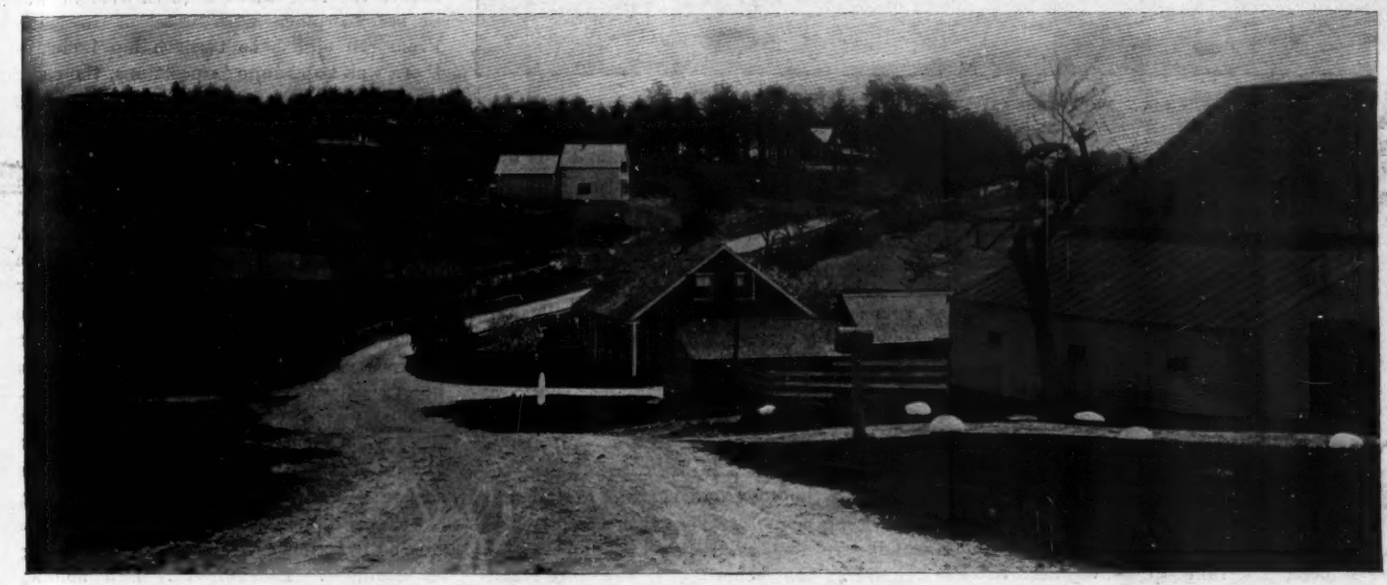
MOTOR AGE

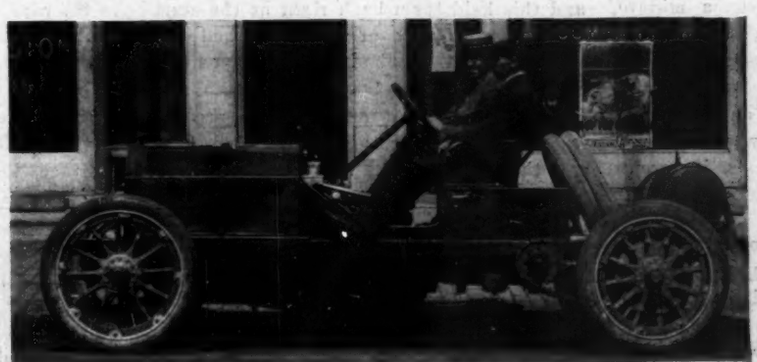
LOWELL ROAD RACE RETURNS STRANG VICTOR



STEEPEST GRADE OF COURSE OF THE LABOR DAY ROAD RACE AT LOWELL, MASS.

LOWELL, MASS., Sept. 7—Louis Strang, driving a four-cylinder Isotta, the same one in which he flew to victory at Savannah and Briarcliff this year, won the Butler Ames trophy here today from a field of six others in a race on the Merrimac river boulevard, covering 250 miles in 4 hours 42 minutes 34 seconds. His average for the distance was 53 6/10 miles an hour. It was a very popular victory, too, for no one received more cheering around the road race circuit. From the start until he crossed the finish Strang never had occasion to stop for anything and the victory was also another one for Michelin tires as well.

Harry F. Grant, a Bostonian, driving a six-cylinder Berliet, the only six in the race, got second place. William Bourque in a Knox was third and George Robertson in a Fiat was fourth. There were seven starters but these four were the only ones to finish. Bob Burman in a Buick was making a splendid fight for second place when his car was disqualified by the officials because he had extra help in changing a radiator. Lescault in a Simplex was slipping into second place then but had cylinder trouble and withdrew in the twentieth lap. Charles Basle, another Bostonian, with a Knox covered seven laps, and nothing was heard from him after that. When Strang had finished the race he was more than an hour ahead of the nearest competitor.



GEORGE ROBERTSON IN FIAT, ONE OF LOWELL RACE CONTESTANTS

That in brief tells what happened here today. But there were many things during the progress of the race that kept up the interest and made it a big success. That there was not a single accident proved a big surprise to the spectators, who went there expecting to see machines and men spilled on the dangerous curves. Another notable feature of the race was that the cars pounded along over the rutty going on some of the stretches of the race course without dislodging any of the mechanism.

It was an ideal day for a big race and thousands of peole poured into Lowell Sunday night and this morning the throng was augmented by thousands more. It was the first big affair of the sort ever held in New England and the accessibility of the course, together with the fine weather and its being a holiday, proved magnetic enough to draw people from everywbere. Yet

RIGHT HAND TURN AT TYNGSBORO BRIDGE, GOING INTO WILLOW GROVE AVENUE

there was no sign of congestion anywhere. The people scattered themselves all around the course rather evenly and so everyone had a fine chance to see the racers tearing along at a speed which to many of them was a revelation and bordered upon the frightful. The crowd was estimated at over 100,000.

Along the boulevard the drivers had a fine stretch to make fast time, of which they took advantage. In the center of it was located the grand stand and the people there could see the cars a mile in either direction. The early visitors got to their places in time to see the big cars come snorting out onto the road about 9 o'clock and take up their places in the order of their start. Each car belched forth fire and smoke with accompanying roars like artillery and then all was quiet again. Officials of every description jogged up and down the road and militiamen stood at a distance of a road apart and saw that the crowds did not encroach upon the course.

As the sun mounted higher in the heavens and began to shed its rays down in a more perpendicular angle, Starter Fred Wagner got Lescault to draw his car up to the line. The others were then placed about 15 yards apart. Sweet femininity in pretty gowns got up and began to look interested. At last there was a minute separating Lescault and the start of the race. He had his motor going and as the seconds were tolled off he watched the road ahead. With a slap on the back Wagner said "Go," and away he sped. All eyes followed the car as it swept along and rounded a turn out of sight as Robertson was sent away.

The spectators in the grand stand had barely got settled when the announcement came that a car was coming, a bugle sounded and everyone stood up except a few of the old shellback newspaper men who were not ready to enthuse so early in the race. Away down the boulevard to the east there was a cloud of dust and a little speck of dark gray that rapidly changed into a black swaying object that seemed to be some monster with gaping jaws. As the sun poured on it the black changed to red and it was recognized as the Simplex with Lescault driving. He was past in a flash and another wave of dust showed a second car was coming. It did not make much noise as it sped by carrying Robertson.

Then came a bright red car emerging out of the dust. It kept a little to the right of the road and showed that it was traveling some. "Strang" someone yelled, and sure enough, it was. There was a rumbling that echoed as if one were standing at the entrance of a tunnel and 1,000 drums were being beaten simultaneously. The wheels sent up a spray of dust and pebbles, the car bounded a bit like a chip in the tiny waves of a lake, and out of sight it lost itself in a swirl of dust. Then the times were compared and it was found that both Robertson and Strang had gained on Lescault and there was but one second difference in their time for the round. This was in Strang's favor and it put him in first place, from which he was never displaced.

Burman and Bourque followed in that order. Basle and Grant had tire trouble and this held them back right at the start and before either of them finished the first round they had been lapped by Strang, Robertson, Lescault, Burman and Bourque. Then the race began to present its changes and cars were shifting here and there. Up at the hairpin turn Strang did not try to do any fancy driving, slowing down before he reached it and so he never lost any time for tire trouble. Others came limping around on three tires, Grant passing along on a rim three different times. At the Dunbar avenue turns no one took them more moderately than Strang, but when he got to the straight stretches he let his car out at a terrific clip and more than made up for the care he exercised elsewhere.

There were not many changes in the early part of the race. Lescault and Robertson changed places, the latter going into second on the first round and then dropping to last on the fourth, while Lescault poked into second place. Burman forced himself into third place then and before the race was one-third over he was in second place with Lescault in third. From the eighth to twelfth lap inclusive there was no change in positions, the order when the race was half over being Strang, Burman, Lescault, Bourque, Grant, Robertson. There were no tidings of Basle, leaving but six in the race. Robertson had some tire trouble but got going good again and from last he got to fourth place, passing Grant. When Burman came around again it was noticed that his car looked different, and the judges were called to look into the matter. He kept on until he had completed twenty laps before action was taken on the matter. But he was disqualified from the twelfth lap. As he was in second place then that allowed the others to move up one. When the race was three-quarters over Strang had such a commanding lead that there was no question as to his winning, barring an accident. Lescault was still holding second place, while Bourque crept into third, with Grant fourth and Robertson back last. The next lap saw Grant displacing Bourque and the Simplex dropping out with cylinder trouble. From that time to the finish the order was not changed.

It was not quite 3 o'clock when Strang came bowling down the stretch on his last lap. He had been coming around so consistently that there was no doubt of the finish then and as he swept along everyone rose up and cheered madly. When the spectators looked at their score cards, however, and saw that the others in the race were half a dozen or more laps behind they were impatient to get away. Some of them left but the majority remained until the last car passed the line shortly before 5 o'clock. Strang's 10:53 in the sixth round was the fastest lap of the race, the announcer stated.

LAP BY LAP PROGRESS OF THE CARS THAT PARTICIPATED IN ROAD

	1	2	3	4	5	6	7	8	9	10
Lescault, Simplex	:12:21	:24:35	:36:50	:48:56	1:01:06	1:13:18	1:28:53	1:40:55	1:52:56	2:04:56
Robertson, Fiat	:11:43	:23:45	1:08:22	1:19:56	1:32:05	1:43:50	1:56:02	2:31:12	2:49:33	3:02:01
Strang, Isotta	:11:42	:23:25	:34:25	:46:28	:59:06	1:09:59	1:21:48	1:33:28	1:44:45	1:56:25
Burman, Buick	:13:33	:25:26	:38:40	:50:32	1:02:21	1:15:49	1:27:27	1:39:07	1:50:44	2:02:32
Bourque, Knox	:14:06	:26:20	:41:28	:53:41	1:40:40	1:52:54	2:05:17	2:18:01	2:30:35	2:42:59
Baill, Knox	:27:57	:45:18	1:06:31	1:29:28	1:41:19	1:53:11	2:04:51	Out.	———	Cause
Grant, Berliet	:36:25	:48:15	1:02:08	1:35:40	1:47:24	1:58:55	2:19:30	2:31:	2:42:44	2:54:21

Strang's Isotta, which he drove to victory here today with the same clock-like regularity that distinguished his performances earlier in the year at Savannah and Briarcliff, has been in the limelight so much during the past half year that its mechanical details are more or less a matter of common knowledge. It has a four-cylinder vertical engine, the metric dimensions of which are the equivalent of 5⅞ bore by 5½ stroke, thus making it a high speed motor, while it is rated at 60-horsepower, though, needless to add, it is capable of an output considerably in excess of this figure. An Eisemann magneto is the sole provision for ignition, lubrication being effected by the exhaust pressure, a 12-gallon tank of lubricating oil being carried between the fuel supply tank and the driver's seat. A carbureter of special Isotta design, which, however, does not differ radically from accepted standards, a centrifugal pump and honeycomb radiator complete the motor details. Transmission is through a four-speed sliding gear of the selective type to double side chains, the gear ratio being 2 to 1, which accounts in part for the excellent speed performance of the car as some of the others were geared lower. The wheelbase is 118 inches and the tire equipment is Michelin on demountable rims of the same make. Throughout the 250-mile swing-round the endless turns of the 10-mile circuit, Strang never lost a moment through mechanical trouble, while the goddess of tire fates was equally amiable, his only Michelin mishap being a puncture, on which he finished as fast as if all four were still good.

The Berliet No. 8, which sprung the surprise of the day by finishing second after having had endless tire trouble, was the only representative of the six-cylinder type entered. Its cylinders are cast in pairs and measure 4¾ by 5 inches, giving it a rating of 60 horsepower, which is conservative, to judge from its speed abilities. It was one of the two longest cars in the contest, and its wheelbase of 126 inches proved an advantage, rather than a hindrance, in taking the numerous turns. A carbureter of special American Locomotive design takes care of this essential, while lubrication is by means of a constant circulating system. Fuel feed is by pressure, ignition by Bosch high-tension magneto, a honeycomb radiator and centrifugal pump providing for the cooling. A four-speed selectively operated gear set and side chains complete the transmission. Diamonds on Continental demountable rims form the tire equipment.

On the Boulevard Where It Was Possible to Attain Great Speed

The Knox team, Nos. 6 and 7, was extremely business-like, the smaller showing its mettle by finishing third. No. 6 was the small Knox, having a four-cylinder engine measuring 4⅞ by 4¾ inches and rated at 40 horsepower, its wheelbase of 102 inches making it the smallest car entered. The motor is of the new water-cooled valves-in-the-head type of Knox type of 1909, and is lubricated by a special oil circulating system. A Splitdorf magneto, supplemented by a set of accumulators and four-unit Splitdorf coil provided for the ignition. The tire equipment consisted of Fisk on the Fisk demountable rims. With the exception of its difference in size and its side chain drive, the same description applies to a great extent to the No. 7 Knox, the motor dimensions of which are 5½ by 5½ inches, while its rating is 60 horsepower. Its wheelbase is 106 inches and it also had Fisk tire equipment. Both were fitted with special shock absorbers.

The No. 1 Simplex, which was a sure second up to within two or three of the short laps of the finish, when, according to report, it cracked a cylinder and had to retire, is a 50-horsepower four-cylinder machine which distinguished itself at the Briarcliff last spring. Its cylinder dimensions are 5¾ inches square and its motor turns over at a rate which, with the car's high gear ratio, made it pass the stand on the boulevard straightaway at a pace that made Lescault an equal favorite with Strang from the spectacular point of view. It was one of the longest cars competing, its wheelbase of 126 inches being the same as the Berliet and exceeding the closest approach to this by almost a foot. Like most of the others, its semi-elliptic springs were carefully wrapped. In addition to this, it was equipped with Truffault-Hartford shock absorbers. Drive is through a four-speed selective sliding gear set to double chains. Its tire equipment consisted of Michelins on Michelin demountable rims.

Of the seven contestants which lined up this morning, the No. 2 Fiat is the only one having low-tension ignition, a Bosch magneto being used. It is a 60-horsepower four-cylinder machine, its dimensions being 140 by 135 millimeters, and like the Isotta, having a bore exceeding the length of its stroke, which accounts for its speed of 1,400 to 1,500 revolutions per minute. Contrary to expectation, its performance was a disappointment from the first, and its motor troubles, apparent early in the race, became more pronounced toward the end, when it seemed to be running on three cylinders only. Like both the Simplex and Isotta its transmission consists of a four-speed selective gear and side chain drive. It was equipped with Continental tires and the Continental ready-flated replacements.

The performance of the little Buick No. 4 proved a veritable surprise. With its 4⅝ by 5-inch four-cylinder motor, rated at 40 horsepower, it maintained a speed and regularity of running that was amazing. For ignition, a Remy magneto was employed, supplemented by a set of Duro accumulators and Connecticut coils. It was geared at 2½ to 1 and was one of the two shaft-driven cars in the race. Before the latter was half over, however, it showed signs of giving way under the strain. Its radiator bearing No. 4 was replaced by a new one and there were signs of rear axle trouble which gradually became worse and eventually prevented a successful termination of what was a most creditable showing.

RACE AT LOWELL, MASS., LABOR DAY, WON BY STRANG, IN THE ISOTTA

11	12	13	14	15	16	17	18	19	20	21	22	23	24
2:16:54	2:28:52	2:48:59	3:04:08	3:16:11	3:28:11	3:40:19	3:52:37	4:06:54	Out; cylinder trouble.				
3:14:34	3:27:10	3:40:39	3:52:55	4:06:01	4:28:25	4:40:48	5:00:57	5:15:50	5:29:19	5:43:10	6:01:48	6:18:57	6:38:32
2:08:09	2:20:22	2:31:46	2:44:12	2:56:05	3:07:58	3:19:37	3:31:16	3:42:43	3:54:05	4:05:50	4:17:33	4:30:49	4:42:34
2:14:17	2:26:53	Disqualified for using extra help to change radiator.											
2:55:24	3:01:48	3:20:35	3:43:48	4:10:41	4:23:50	4:37:12	4:50:15	5:10:30	5:23:38	5:36:54	5:57:07	6:16:46	6:33:29
not made known.													
3:06:16	3:18:05	3:40:45	3:52:59	4:09:18	4:28:04	4:40:47	4:53:25	5:05:49	5:18:14	5:30:31	5:42:57	5:56:11	6:14:58

THOMAS FLYER WINS ROAD RACE AT DENVER

THOMAS FLYER, RACE WINNER, BALL DRIVING, AT FIRST TURN

DENVER, COLO., Sept. 7—Harry Ball, driving a Thomas Flyer, covered the 290 miles in 6 hours, 26 minutes and 17⅝ seconds, and carried off the $500 cash prize in the 295-mile road race of the Denver Motor Club today. Levi Lorimer, with a Chalmers-Detroit 40, the Bluebird, came in second; time, 6 hours, 37 minutes, 40 seconds.

J. H. McDuffee, entrant of the Chalmers-Detroit, has filed a protest against the Thomas entry, claiming a violation of the rule which provides no adjustments, etc., shall be made during the race. McDuffee claims to have photographs showing such violation.

Approximately 25,000 people stood for 10 hours in the broiling sun, without a particle of shade of any sort, to witness the motor cycle and motor car races. Promptly at 10 a. m. Starter James McGill cracked his pistol and car No. 1, the Bluebird, glided off like going down a skid. One minute apart followed the other nine cars, and the contest was on.

The first to cover the 14¾-mile lap was the Chalmers, in 16:41; No. 2 Colburn followed in 17:30; the Corbin, 18:21; Thomas, 18:28; No. 4 White, 18:29; Great Smith, 19:06; No. 3 Colburn, 19:34; Peerless, 19:52; Studebaker, 20:16; No. 5 White, 39:22. This gave the crowd a zest for the sport. At each reappearance of the Chalmers-Detroit, the Colburn 40, the Thomas, the Studebaker and the Corbin, the crowd would yell itself off its feet. When the score board began showing the regularity of the work of the Chalmers-Detroit, the Colburn and the Thomas, excitement became intense and these cars figured not a little in the betting—yet there were many who put considerable money on the Corbin.

The first mishap came to the Colburn 40; on the sixth lap it stopped on account of burnt out bearings. Then came word that the reason Dundee's White had not shown up since the second lap was because it was stranded near the upper end of one of the legs of the course, while on the ninth lap the Corbin went out of commission because of a broken motor crankshaft.

The nerviest act was started in the twelfth lap by Eubank driving the Studebaker. A tire flew off and he continued in the race until the sixteenth lap on the rim. The first accident occurred to the Chalmers-Detroit on the seventeenth lap. Lorimer accidentally steered it into a gully; the jar threw the mechanician 30 feet and broke off the seat. Driver Lorimer held on to the wheel, righted the car, and finished the race alone.

The other accident caused much regret as it happened to the second entry of the Colburn company—the Colburn 30. This car was doing splendidly all through the race and stood a good chance for second place. In the ninth lap and when within an eighth of a mile of the line, the steering gear refused to answer properly and the car dashed into a telegraph pole, bending it over and almost demolishing the car. Neither of the riders was injured.

The most regular running must be credited to the Colburn 30. Lap after lap was turned off at from 19 minutes to 19:34, fourteen laps showing these figures.

The Thomas was quite steady in its work until the thirteenth lap, and then it got down to business and had its struggle to the finish with the Chalmers. The Studebaker kept up a pretty steady gait in the 20's from the first to the twelfth lap, when trouble held it up for more than a half hour; getting another start it began cutting down distance and had covered the sixteenth lap in 19 minutes 31 seconds when the race was ended by two cars having covered the twenty laps.

This event was the first motor car speed races to be held under the auspices of the new Denver Motor Club and also the first to be held in Denver with the sanction of the racing board of the A. A. A. The starting point was 5 miles from the city, over a 14¾-mile course, around which the cars were to go twenty times, making a total of 295 miles for the race.

DETAILED REPORT OF THE TIME MADE IN THE LABOR DAY ROAD

	1	2	3	4	5	6	7
1—Chalmers-Detroit	16:45	33:28	50:35	1:09:06	1:29:02	1:49:01	2:08:21
2—Colburn	17:30	34:40	57:25	1:17:57	1:37:33	Out.	
3—Colburn	19:34	39:02	58:14	1:17:34	1:36:45	1:56:05	2:15:30
4—White	18:29	40:14	1:43:10	2:09:36	2:32:16	3:22:51	3:57:04
5—White	39:22	1:28:04	Out.				
6—Peerless	19:52	43:24	1:44:41	2:48:50	3:26:00	4:04:51	4:41:19
7—Great Smith	19:06	39:51	1:00:20	1:20:32	1:40:03	2:28:27	3:10:00
8—Thomas Flyer	18:28	37:37	58:15	1:16:10	1:34:09	1:52:12	2:13:14
9—Studebaker	20:16	40:17	1:02:31	1:23:34	1:44:00	2:09:53	2:30:22
10—Corbin	18:21	53:48	1:09:44	1:27:50	1:47:33	2:07:48	2:26:06

For a month prior to the day of the race the officials of the Denver Motor Club, under the leadership of Chairman of the Racing Board John Fry, were busy perfecting all details as to entries, as well as putting the course in proper condition. The result was that ten cars contested for speed and endurance supremacy on a most ideal course for such an event. The course is a triangular one, with 6½ miles to each leg and

STUDEBAKER, WITH EWBANKS AT THE WHEEL ON SHARP TURN

1¾ miles across the jointure. There is a hairpin turn, some S turns and other sorts of turns, steep grades to negotiate, hollows to go through, bridges and railroad tracks to cross.

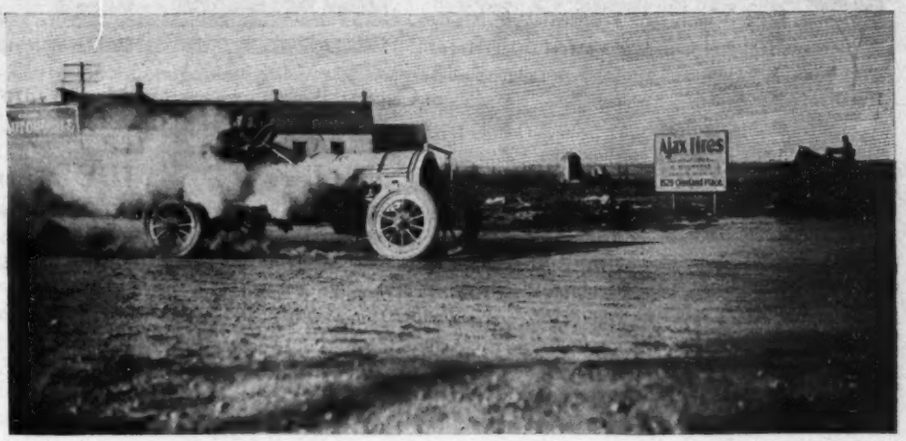
Principal among the entries which made tryouts for a few days before the date of the race were the Chalmers-Detroit, Colburns, Corbin, Great Smith, Whites and Thomas, and they gave the spectators thrills of expectation that were fully realized. The local car, the Colburn, was interestingly watched day by day, and when one day Brinker wound around the 14¾-mile course in :17¾ the money was plentifully placed on his car. The next day Mathewson in the Thomas 60, the same car Monte Roberts drove in the Briarcliff race, covered the same distance in :16. The White steamers, owned by F. W. Gregory, of San Francisco, frequently gave evidences of tremendously high speed, one spurt on a short distance showing a pace of 85 miles an hour. The Corbin never was let out to its highest power during the tryouts—not when anyone was looking—and Swanborough consistently nursed the time it made, promising something sensational.

The equipment of the course was ideal. Telephone communication from a dozen different points centered in the grandstand which was especially constructed for this occasion with a seating capacity for 5,000. Opposite the stand was erected a bulletin board 25 feet long and 20 feet high, on which was marked each car's time by laps. The course was patrolled by fifty cavalrymen from the Colorado National Guard and fifty deputy sheriffs and fifty policemen kept the mass of standing humanity clear of the track. Men on motor cycles kept ahead of each car for a mile and their approach to the grandstand was the signal that a car was coming. The following is the entry list, several changes in drivers and mechanicians being made at the last minute, Ball, succeeding Mathewson:

No.	Car.	H.P.	Driver.
1	Chalmers-Detroit	40	Levi Lorimer
2	Colburn	40	Harold Brinker
3	Colburn	30	A. B. Clow
4	White Steamer	30	G. Siegried
5	White Steamer	30	Fred Dundee
6	Peerless	30	S. S. Pierce
7	Great Smith	40	G. C. Clarke
8	Thomas	60	Harry Ball
9	Studebaker	40	H. B. Ewbank, Jr.
10	Corbin	30	E. W. Swanbrough

The following acted as officials at the event:

Judges—F. W. Van Sicklen, Chicago; Dr. Ralph L. Taylor and Harry Howard, Denver. Referee—Thomas F. Daly.



LORIMER IN CHALMERS-DETROIT, TURNING CORNER AT MODEL ROAD HOUSE

RACE OF THE DENVER MOTOR CLUB, WON BY THE THOMAS FLYER

8	9	10	11	12	13	14	15	16	17	18	19	20
2:27:41	2:47:50	3:06:43	3:25:51	3:45:44	4:03:18	4:27:42	4:46:35	5:11:00	5:32:50	5:54:34	6:15:46	6:37:40
2:34:34	2:53:32	3:13:04	3:35:12	3:54:45	4:36:55	4:56:09	5:15:09	5:35:36	5:54:48	6:14:02	Out.	
4:22:55	4:46:19	5:21:14	5:49:40	6:38:04								
5:10:10	5:40:55	6:14:34										
3:33:04	4:10:57	4:33:10	5:09:45	5:32:40	6:01:22	6:22:23						
2:37:50	2:57:41	3:21:27	3:38:55	3:56:26	4:14:11	4:31:35	4:53:03	5:10:27	5:27:39	5:45:30	6:06:23	6:26:17 3-5
2:50:58	3:11:42	3:31:37	3:51:42	4:12:28	5:07:27	5:34:07	6:04:15	6:23:46				
2:49:08	Out.											

TAME MEET AT WILDWOOD

Wildwood, N. J., Sept. 7—Steam triumphed over gasoline this afternoon in boulevard, the Stanley steamer, driven by D. Walter Harper, flashing over the tape by a comfortable margin in each instance. But the field was not a representative one by any means, from the gasoline standpoint, the Parkin and the Sharp-Arrow being the only cars to approach the Stanley's time.

Indeed, there was a woeful dearth of cars of all kinds. So scarce were they, indeed, that the committee in charge had not a sufficient number of entries this morning to warrant the publication of a program, and had it not been for a number of Philadelphia visitors who post-entried their cars, it is quite likely that there would have been no races. Arthur Hammerstein, a relative of the impresario, entered his Mercedes as a stop-gap; John Wilkinson did likewise with his Packard and young John Wanamaker, Jr., with a car of similar make. Summary:

Match race for Matheson touring cars—Willie Haupt won, time 1:22; Frank Yerger second, time 1:27; Louis Taubel third.

Free-for-all, flying start—Stanley, D. Walter Harper won, time, :55 2-5; Parker, Joseph Parkin, Jr., second, time :58; Sharp-Arrow, William Sharp, third, time: 59; Packard, John Wilkinson, fourth; Studebaker, Frank Yerger, fifth; Mercedes, Arthur Hammerstein, sixth.

Free-for-all, standing start—Sharp-Arrow, William Sharp, won, time 1:04; Parkin, Joseph Parkin, second, time 1:04 3-5; Studebaker, Frank Yerger, third; Mercedes, Arthur Hammerstein, fourth.

Match race for Stanley runabouts—Frank Dorrell won, time, 1:25 2-5; I. H. Clayton, second, time 1:27 2-5; William Lippman third.

Special match race for touring cars, owners driving—Packard, John Wanamaker, Jr., won, time 1:03 3-5; Pierce-Arrow, John J. Coyle, second, time 1:19; Peerless, Arthur Hammerstein, third.

Handicap for gasoline stock touring cars, any price and power—Mercedes, 19 seconds, Arthur Hammerstein won, time 1:18; Parkin, 4 seconds, Joseph Parkin, Jr., second, time 1:21 1-5; Stanley, scratch, D. Walter Harper, third; Sharp-Arrow, 4 seconds, William Sharp, fourth; Studebaker, 18 seconds, Frank Yerger, fifth; Packard, 10 seconds, John Wilkinson, sixth.

Mile time trials, flying start—Stanley, D. Walter Harper won, time :47 2-5; Sharp-Arrow, William Sharp, Jr., second, time :51 1-5; Parkin, Joseph Parkin, Jr., third, time :51 3-5; Packard, John Wilkinson, fourth, time :57 2-5; Studebaker, Frank Yerger, fifth, time 1:05 3-5; Mercedes, Arthur Hammerstein, sixth, time 1:06 3-5.

Kilometer time trials, flying start—Stanley, D. Walter Harper, won, time :29 1-5; Parkin, Joseph Parkin, Jr., second, time :30; Mercedes, Arthur Hammerstein, third, time :41; Studebaker, Frank Yerger, fourth.

WHERE THE DENVER MOTOR CLUB'S ROAD RACE STARTED

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MOTOR AGE

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Carbon Accumulations in Cylinders

THE accumulation of carbon in the cylinders of combustion motors, the causes of this accumulation and the means of removing it are problems of greater concern to the motorists than they often get credit for. In general carbon collects on the cylinder heads at a point above the top of the piston when the piston is at the top of the stroke. The carbon generally finds its way into the valve cages around the intake and exhaust valves and not infrequently it is discovered heaped on top of the valves, the only clean part of the inside of the valve housing being the bevelled seat of the valve and the seating it rests upon. At other times the carbon covers the top of the valve chambers and covers the insulation for the spark plugs or low-tension igniters as the case may be.

Too Much Oil the Cause

IN the majority of cases the use of too much oil is the direct cause of this carbonization. Too liberal supply of oil to the cylinder walls permits of the rings carrying it up on the walls past the head of the piston, after which it is generally very readily carbonized or burnt by the excessive heat of the explosion, which in motors of high compression reaches as high temperature as 2,000 degrees Fahrenheit. In many motors the oil does not carbonize immediately it gets on the walls of the combustion chamber or above the piston, but as often happens it collects first on the piston head and on the valves. Due to the force of the explosion it collects generally over the entire inside of the combustion chamber and its adhesion to this is greatly increased if the walls of these are not carefully cleaned of burrs and miniature projections.

Dangers From Carbon

THE accumulation of it frequently gives rise to preignition, due directly to sharp pieces of carbon being heated to red or white heat by the explosion and these particles not cooling off sufficiently before the succeeding explosion so that there remains in them sufficient heat with the compression to explode the mixture before the proper time. At other times the loose particles of carbon are blown onto the seating of the exhaust valve where they are often caught by the valve when closing, the result being the valve is not allowed to close properly and part of the mixture escapes through the valve on the compression stroke.

In Removing Carbon

FOR years common kerosene has been used in the removal of carbon from cylinders, the policy being to inject a few spoonfuls of it into the cylinders at night and allow it to remain until the following morning. Of late several special carbon removers have been brought out, many of which show superior carbon removing qualities to kerosene. In using any of these special carbon removers care must be taken to use enough and no more. It commonly happens that where kerosene is used several spoonfuls are put into each cylinder and when this is done once a week the oil in the crankcase soon becomes too thin for proper lubrication. The best way in using these preparations is to use a squirt can and inject a very little into each cylinder while hot—not allowing the cylinders to cool before using it. Many dealers do not allow their customers to make use of kerosene at all because of the danger of using too much, and the effect of this upon motor lubrication. Although there are many successful methods of removing carbon, the best policy is to avoid it, which partly rests with the operator and can be done by feeding just the requisite amount of oil to the different parts. With some cars this is almost impossible because of the poor system of lubrication, but, where it is possible, it is generally accomplished by lubricating so that the smoke cloud is absent.

1909 and Its Car Improvements

THE weekly announcements of makers of motor cars relative to their 1909 machines and the changes in them already give evidence of numerous improvements that will add materially to the performance of the machines for the coming season, as compared with those of the past. Of these improvements the average buyer is apt to look for changes in the length of wheelbase, changes in the size of tires, ignition changes, and perhaps a few others that are apparent to the motorist who follows the industry closely. Changes of this nature all play their part in the evolution problem, but it rarely happens that these are the ones with which the engineering forces and the laboratory staff have wrestled with. Generally, the big changes, whether they can be seen or noted in a casual glance at the car or not, are not widely heralded by the maker, while those changes, such as alteration of wheelbase and body, which have little to do, from an engineering point of view, are given broadcast publicity.

Cooling Receives Attention

IT is surprising the amount of experimenting not a few of the big makers have done in the last year with the problem of radiation—the effectual cooling of the different cylinders. Radiators have been made the subject of profound study, the work resting with the relative value of the vertical water flow in the cellular type as compared with the transverse circulation system, the diagonal system, or different combinations of these. The effort of certain companies along this line was particularly noticeable in the 1908 Glidden, in which companies having previously used the vertical flow had adopted the diagonal with transverse currents. In other cases the course followed was diametrically opposite to this, yet both companies expressed themselves more than pleased with the changes.

Radiator Shape Not Important

MANY of the experiments in radiator improvement go to show that the radiator shape is not a potent factor in the determination of the radiating coefficient of the radiator. The depth from front to rear is entirely discarded as unimportant by one or two makers, they claiming as good results from radiators of shallow depth as from one with greater depth. In radiators differing in this respect it is certain that one has a greater water capacity than the other, but the additional cooling facilities of the radiator do not appear to be uniformly effected. In opposition to this one or two makers make empirical claims to obtaining superior results from radiators of good depth as compared with those of shallow ones. This condition is due to the radiating members of the water cells or tubes.

Pumps and Jackets Changed

WATER pump and cylinder jacket design, as well as hose connections, play their part in the cooling efficiency. Common practice is to fit larger pumps and to alter the design of these, in order to get a greater flow of water. Greater attention is bestowed on the lubricating of these pumps. In water jackets more space is arranged for around the exhaust valves, which is the hottest part of the explosion chamber. Jacket spaces have been generally increased in size, and the improvements in the cooling fans show study in the determination of the curvature of the blade as well as in the drive of the fan. Although little is said about it much study is done by designers on the fan design and drive, neither of which receives much comment among the general public. It is another case of the unseen being more important than the seen and talked-of parts.

NAZZARO DRIVES AT RECORD PACE IN FLORIO

Italian Wins Cup at Bologna and Averages 74 Miles an Hour—Other Racing News of General Interest

PARIS, Sept. 7—Special cablegram—Nazzaro has come into his own again, the Italian crack in his farewell appearance in a racing car, having won the Florio cup race run at Bologna yesterday. Coupled with his victory was the shattering of a record, Nazzaro and his Fiat having covered the 327.6 miles in 4 hours 25 minutes 21 seconds, which is equal to an average of 74.271 miles an hour. Seventeen cars started in this race, but only six finished, the order of tape being:

Car and driver	Time
1—Fiat, Nazzaro	4:25:21
2—De Dietrich, Trucco	4:34:07
3—Itala, Cagno	4:56:12
4—Mors, Demogeot	4:57:11
5—Fiat, Lancia	5:08:51
6—Clement, Garcet	5:22:07

From this table it will be seen that the race was a great victory for Italy, for of the seventeen cars six only were of Italian manufacture and eleven of French, giving Italy 50 per cent of its cars finishing and France only 27 per cent. The race was most interesting and while there were many mishaps no one was seriously injured. Following his victory, Nazzaro announced that it was his last race.

The rules for the Coppa Florio were practically the same as those necessary for the 1908 grand prix. Bore only was taken into consideration as far as engine size is concerned. For a single cylinder this was limited to 310 mm. bore, for a two-cylinder engine 219 mm., for a three-cylinder 179 mm., and for a four-cylinder 155 mm. Six-cylinder engines had to be within 127 mm. bore, and the limit for eight-cylinders was 110 mm. As to weight, racing cars had to weigh not less than 1,100 kilogrammes, and it was stipulated that a rear drive had to be employed and that the exhaust was to be taken in a pipe to the back of the car, well above the ground. Detachable rims were permitted, but the use of oxygen cylinders, acetylene, or any other such assistance was barred. Two persons seated side by side had to occupy the car during the race, and these had to weigh 120 kilogrammes or over.

Eight prizes of value were distributed in the Florio. The first was a cup presented by the king of Italy, and which was given to the designer of the winning car; the second prize was the challenge trophy, the Florio cup, given by Chevalier Vincenzo Florio. In 1905 the Florio was won by the Itala, and in 1907 by the Isotta-Fraschini.

Quakers Expect a Permit

Philadelphia, Pa., Sept. 5—On Thursday next, after having been taken over the course the previous day, the commissioners of Fairmount park will decide definitely whether or not to permit the running of the proposed 200-mile stock car race over the broad, winding roads of the Quaker City's popular pleasure grounds as a part of the founders' week program. If the desired permission is granted—and those on the inside claim to know that it will be—the contest committee of the Quaker City Motor Club, which is booming the affair, will have a full month in which to complete preparations, for it is its present intention to run the race on Saturday, October 10, between the hours of 6 and 10 a. m. Meanwhile so confident are all hands of a favorable answer from the park commissioners that much of the preliminary work has been blocked out ready for the proper sub-committees to take hold as soon as the word is given. The contest committee has already decided to limit the number of entries to fifteen—first come, first served. To insure a representative field, however, entries of low-powered runabouts will not be accepted. A minimum bore-and-stroke limit, to be announced as soon as the park commission decides favorably, has been decided upon as the best method of insuring a close contest.

The contest committee also has been busy securing entries. Already favorable responses have been received from the Lozier, Studebaker, Locomobile, Apperson and Stearns agents, while Chadwick, Benz, Pennsylvania, Knox, Stoddard-Dayton and several other entries only await the favorable decision of the commission. The fact that the eliminating trial for the Vanderbilt cup is scheduled for Saturday, October 10, may cause the advancement of the local date to Thursday; but it has been pointed out that as no entries of possible Vanderbilt candidates could be hoped for, it would be inadvisable to upset the plans of the founders' day committee, which has set aside Saturday as athletic day, and sports of all sorts would naturally be scheduled for that day.

England's Red Letter Event

London, Sept. 4—The sole racing event promoted this year by the R. A. C. is to take place on September 24, the Isle of Man being, as usual, the scene of operations. The 38-mile course originally used for the Gordon Bennett eliminating trials has been reverted to, in place of the shorter lap used in the previous T. T. races. Instead of the fuel limitation which has been the feature of these events, the cylinder bore is restricted this year, the maximum for a four-cylinder engine being 4 inches. Forty entries have been received, of which twenty-two are British and eighteen foreign, no American car figuring in the latter section. Dealing with the cars themselves some extraordinary statements have been published, both with respect to the power of the engines and the speed attained in practice. The Humber company credibly states that its engine has developed over 70 brake horsepower on test. This engine has stroke of 6 inches compared with a 4½-inch stroke of the Calthorpe and the 6½-inch of the Arrol-Johnston. In an event at last Brooklands meeting the Hutton car, which is entered for the coming race, was certified to average 83 miles an hour, and this fact lends some credence to the belief that the race will be extremely fast. Practicing has not yet commenced, owing to the crowded state of the island at present.

Mile Mark for Fiat

Minneapolis, Minn., Sept. 5—Ralph de Palma, driving a 90-horse power Fiat, clipped a second off the Christie's world record of :52 for a circular track, and negotiated the course of the Minnesota state fair grounds in the most sensational speed trial ever seen here. De Palma followed Christie in his try at the record, and he won the audience of 30,000 by his wonderful driving and skillful negotiation of the track. Christie himself had hit a mark of :52½ in his attempt.

Christie and de Palma were the stars of the Minnesota state fair's annual motor car day. Christie, driving his 120-horsepower front drive car, made the first attempt. His first mark was :52½. Following de Palma's record breaking mile Christie made another effort at the record and covered the course in :52¼. Following the speed trials de Palma and Christie ran a match race of 3 miles in three heats. De Palma took the first two heats and the race, his time being 3:04 and 3:01⅘.

Coming Motor Events

New York Test—Combined road test and pleasure run of New York Automobile Trade Association, September 16-17.

Southwestern Reliability—Eight-day reliability run of Automobile Club of Kansas City, September 19-26.

Austria's Big Climb—Automobile Club of Austria's annual Semmering hill-climb, September 20.

Massachusetts Test—Bay State Automobile Association's 24-hour endurance run, September 23-24.

Four-Inch Race—"Four-inch race" for Tourists' trophy, on Isle of Man, September 24.

Voiturette Race—Voiturette contest promoted by French L'Auto, September 27.

Thousand-Mile Reliability—Chicago Motor Club's 1,000-mile reliability run, postponed from June, October 6-9.

Vanderbilt Trial—Eliminating trial to select American team for Vanderbilt cup race, October 10.

Road Congress—First international road congress and exhibition in Paris, October 11.

Cleveland Reliability—Three-day reliability run of Cleveland Automobile Club, October 14-16.

Vanderbilt Cup Race—Vanderbilt cup race on Long Island motor parkway, October 24.

Springfield Hill-Climb—Hill-climb of Springfield Automobile Club on Wilbraham hill, at Springfield, Mass., November 7.

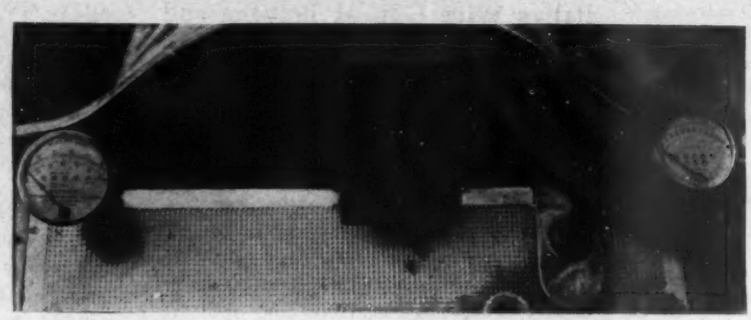
Light Car Race—Automobile Club of America's light car race at Savannah, Ga., November 25.

Grand Prize Race—Automobile Club of America's grand prize race at Savannah, Ga., November 26.

Paris Salon—Annual French motor car show, November 28-December 18.

PREMIER FINISHES ITS 100-CENTURY TEST

CHICAGO, Sept. 8—The 100-day road test of a Premier which was called upon to do at least a century a day during the time, was completed in Chicago at 4:30 o'clock yesterday afternoon when Joseph Moore drove to the curb in front of Motor Age office. The test was started at Indianapolis June 1, and every day from that time on the car was in service, its wanderings taking it to many of the large eastern cities and taking in the Glidden tour, in which it was a press car. When the car completed its 100 days it had traveled exactly 12,189.6 miles and on 4 of the last 5 days it had made double centuries.



VIEW OF THE TWO SPEEDOMETERS USED ON THE PREMIER

Upon the completion of the run the car was turned over to Chairman David Beecroft and Berne Nadall, of the technical board of the Chicago Motor Club, who dissembled the Premier. Their report follows:

"In the examination of the car, careful attention was given to the relation of the different parts before the dis-assembling process began; and as each portion, starting with the body, was removed, the closest scrutiny was pursued. Every part of the motor was taken apart, valve stems and motor bearings were calipered, igniter parts were examined for wear, timing gears were measured, and observations made on the accumulations of carbon in different places. This examination was continued in the multiple-disk clutch, the gearset, rear axle, brakes, universal joints, frame, springs, front axle, steering gear parts, and, in fact, the complete car. Every part examined was found to be in exceptionally good condition, and not a single case of breaking or distortion, which was due to faulty design or workmanship, was discovered in the complete examination. There were one or two evidences of carelessness on the part of the driver which are mentioned in detail later.

"The four make-and-break igniters first examined showed those in the front two cylinders entirely free of carbon, whereas the rear two showed a coating of carbon on the end of the insulation, and on the two electrodes, this being due to excessive lubrication. The platinum points on all four were in good shape, no pitting being noticeable. During the contest these igniters were not, according to the statements made by the Premier representatives, adjusted to any extent, but received the ordinary attention recommended by the maker. The intake valve stems showed wear, varying from one-half-thousandth to one and a quarter-thousandth. The valve seats were all in condition but carbon deposits carried on the tops of the two rear cylinder valves. None of the valves was taken out, ground or cleaned during the run. The exhaust valve stems showed less wear than the intakes, and there was not any indication of pitting, except on the seating of No. 1, which showed very slight corrugations. Of the four cylinders No. 4 was perfect, being as bright and resplendent as the polished bore of a rifle. Compared with this, cylinders 1 and 2 would be ranked 98 per cent, and No. 3, 97 per cent, the last mentioned having two series of longitudinal dark streaks, each of streaks 1 inch wide and approximately 90 degrees apart. The removal valve seatings in all cases were free from carbon deposits and pitting, but the rear two valve cases showed considerable carbon deposits around the valve seatings. The eight valve lifter-rods did not show the slightest indication of wear and the rounded lower ends, which bear directly upon the cams of the camshaft, showed a uniform marking from the cam action. The wristpin bearing of the front piston showed about 1-32 inch wear but all of the other motor bearings were in perfect adjustment.

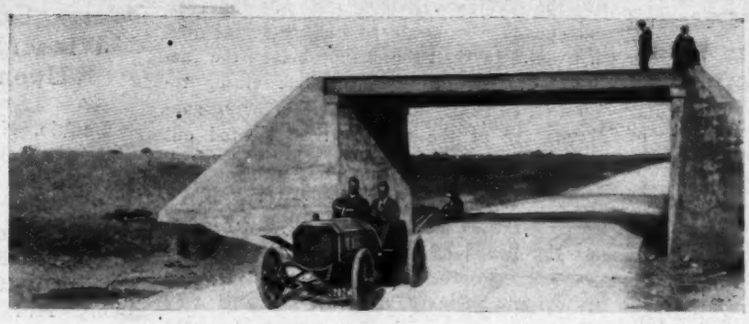
"The forty-seven steel disks in the clutch were separately examined. A uniform film of oil was discovered between all adjacent disks, with the exception of half a dozen at the flywheel end, where there was slight evidences of insufficient oil by the circular rings on the disks where one had been rubbing against the other. None of these was sufficient to warrant replacement, and in not a single case was a disk warped to the slightest degree.

"In the transmission there was a slight burring on the gear for intermediate speed, caused by poor gear shifting. The high-speed clutch teeth showed a slight rounding of the edge in one or two cases but all of the other transmission gears were entirely free from evidences of wear. The pinion on the rear end of the driveshaft, and the differential bevel did not contain the slightest indications of wear, or did the different cup and cone bearings carrying the differentials. The external emergency fiber-lined brakes had not been used during the run and were in perfect condition. The internal brakes bronzed expanders, 14⅞ inches in diameter and 3 inches wide, provided with cork inserts, did not show any indication of wear or scratching; these brakes run in oil, and all of the cork inserts were in condition, and the wear on the bronze shoe was not noticeable except that the margin in two places, where there had been a little dragging. The rear axle housing was in alignment. One fracture was shown in the top lip of the right side member of the frame near the center. This occurred at the attachment of a cross piece where the driver's seat is supported. The steering gear showed a backlash of 3½ inches. The left front wheel bearing was slightly loose and the side members of the frame showed not more than 3-16-inch sag. The compression was good in two cylinders and slightly less in the other two. The motor invariably started on one lift of the starting crank."

PREMIER HUNDRED-CENTURY CAR FINISHING ITS LONG JOURNEY AT CHICAGO

WORK ON PARKWAY NEARING COMPLETION

NEW YORK, Sept. 7—Work on the new Long Island motor parkway, where the Vanderbilt cup race is to be run October 24, is rapidly nearing completion. About 8 miles of the cement highway is laid and nearly all of the bridges at intersecting country roads and railroads are ready for the cement workers to take hold of. These bridges are formed by a solid cement abutment high enough to permit a steam train or a load of loose hay to pass under the new cement parkway. The tops of the abutments are connected by heavy steel girders, such as are used to support the roof of the Manhattan subway, and around these girders a wooden mold is built and the cement and crushed stone is poured in until the desired level is reached, thus making the bridges at all intersecting roads practically solid cement, steel and stone. The longest bridge is 90 feet. This is the bridge at Central park, where the highway begins to rise about 600 feet before reaching the Long Island railroad track. The abutments are about 35 feet high at this point and the racing cars will pass over railway trains and vehicles which travel along the public highway, so it will be possible while the race is in progress to run trains on this branch on regular schedule and none of the country traffic will be interrupted in the least. This feature of the 1908 Vanderbilt cup race is going to be the most novel and exciting. Never before has it been possible on any great road racing course to see a steam engine and a train of cars racing along for a great distance parallel with the course and then suddenly shooting under the course as the racing machines pass overhead. The approaches to all of those bridges are very gradual.



ONE OF THE BRIDGES ON THE COURSE

All of the material for the grandstand is on hand, and men are busy laying the foundations for the stand, which will be much larger than any previous one. It will seat about 5,000 people, and the boxes will be much larger and more pretentious than heretofore. The Long Island railroad has made preparations to lay side tracks from the Hempstead branch into the back of the grandstand and the motor parkway engineers are planning to arrange a tire control in front of the stand.

The grandstand stretch is about 3 miles in length and the surrounding country is so level that spectators will have a fine view of the racing cars as they approach fully 1½ miles away and they will be in plain view to the naked eye until they have traveled fully 2 miles beyond the grandstand, where they go over a bridge and are lost on their way towards Central park and Bethpage. At this latter point the cement parkway joins the country road, which continues for 14 miles, forming a circuit and connecting again with the cement at the western end of the parkway, which is quite near Garden City. A change has been made since the first announcement of the course. At the western end, the cars will turn off of Jericho road onto the old Westbury road and travel south toward the cement until they reach the old country road. From the old country road the parkway engineers are building a new highway of over a mile in length, which will connect the western end of the cement with the southern end of the old Westbury road, thus doing away with two sharp turns and eliminating Whaleneck avenue, which was to have been used, according to the original plans of the engineers.

Many tourists on Long Island have visited the new parkway and driven on such portions as are completed. Recently Joe Tracy in the Locomobile he drove in the last Vanderbilt tried out a portion of the new speedway and was delighted with the pace he could secure. Speaking of his sensations, Tracy said:

"I think the cement highway is not going to bother the racing drivers at all because most of them have driven in Florida over the hard sand and the appearance of the bridges where the parkway goes under an intersecting highway is very much the same on approaching at high speed as the pile bridges over the sand course in Florida. As the car comes to one of these bridges of course the abutments seem to be about 2 feet apart and of course the possibility of getting through such a narrow space does not appeal to a novice who is traveling at the rate of 90 or 100 miles an hour. These abutments widen out, however, as the car nears them, but the reverberatory shock is very deafening at the second the car passes under this solid cement viaduct. There is also going to be quite a novel sensation to the racing driver as he shoots up over the bridges where the parkway crosses a highway at elevation. The natural inclination is to shut off at a bridge of the ordinary type because there is generally a danger of breaking a spring on account of the irregularity of the surface. In the case of the cement road, however, there is no chance of breaking a spring.

"The beauty about the parkway end of the Vanderbilt race this year is that the spectators will find the monotony of an old-fashioned road race relieved and they can obtain a longer view of the cars as they approach and as they disappear. I think if I were going to look at the race instead of driving I should either get in the grand stand where I could see the long sweep of high speed or else locate near one of the large bridges, where I could see the cars as they flew up over the cement and disappeared in the distance around a curve. The curves of the parkway are banked about right for fast touring cars, but I do not think that it would be possible for the racing cars to take these curves at a greater rate of speed than a mile a minute."

JOE TRACY IN LOCOMOBILE TESTING THE SPEED OF THE PARKWAY

DETROIT ROW MOVING

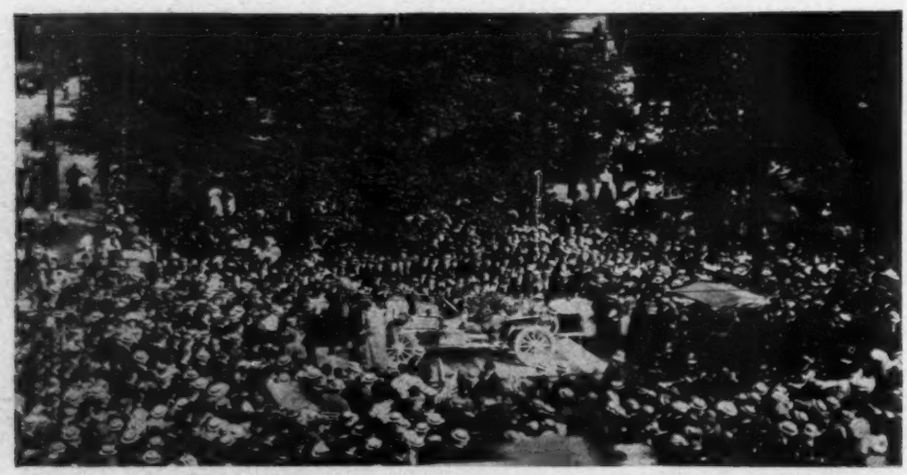
Jefferson Avenue Being Deserted by Many Retail Dealers Who Get Nearer Factories

Detroit, Mich., Sept. 7—An epidemic of garage-building has struck the retail motor car dealers in Detroit. During the present season the large list of dealers who have moved out into the residence districts of the city has been considerably increased and prospects now indicate that, by the opening of the season of 1909, motor row, for years one of Detroit's well known trading districts, will be no more. That section of Woodward avenue lying west of Woodward for three blocks has, in former years, housed easily 75 per cent of Detroit's retail trade, but those expressing the intention of remaining are only a fraction.

The Packard, Thomas and Columbia electric were the first distributors to set the style. The Oldsmobile followed this spring and W. H. V. Neuman started out Woodward, a mile from the center of town. Several new garages have been built during the summer. More recently the announcement has been made that the Cadillac's down town branch will in the future be located far from the stand made famous years ago by William E. Metzger. In fact, the firm is already in possession of its new quarters, which are directly across the street from the big factory of the concern. Still further, a big garage is now building on Woodward avenue, just on the edge of the retail district, for J. P. Schneider and James Brady. The new Mitchell agency will locate in a new building on the avenue next spring, under the management of the Coombs-Gilmore Co., a newcomer to the local trade. Owners of property along Jefferson avenue, which is being deserted by the motor car retailers, are frantic at the change. For some reason or other, business property along this thoroughfare has failed to develop popularity in other lines, the motor car trade having been its sole salvation. A unique feature of the exodus from Jefferson has been the fact that the tire dealers as well have taken part in it. The dealers claim they are nearer their customers in the residence district and that they can attend to the needs of the factories just as well. In fact, the change brings the factories and retail houses much closer together, as nearly all the manufacturing concerns are at the present time located out North Woodward avenue.

A. L. A. M. TALKS SHOW

New York, Sept. 4—An all-day session of the board of managers of the licensed association was held Wednesday. The principal business of the meeting was that connected with the show to be held at Madison Square garden January 16 to 23. The scheme of decoration, the details of which were set forth by Chairman George Pope, of the show committee, was unanimously approved. The structural arrangements will provide a large amount of additional floor space, as well as a more effective ensemble that has heretofore been had. A magnificent triumphal arch is a leading feature. The novel system of installing signs indicating the exhibits will result in greater convenience to the public, and not only not mar the decorative background of the show, but will enhance its value. In fact, the idea of providing a suitable background, appropriate, adequate and sufficiently rich for the formal debut of the 1909 association cars as a whole, has been carried out most successfully. In consonance with this result the show committee has spent considerable time in perfecting details for improving and facilitating the conduct of the show and meeting the needs and desires of the public and the exhibitors. The allotment of space for the presentation of the members' new models was made. The recent policy of the association members prohibiting their dealers from handling unlicensed cars met with full support and will be continued with rigid enforcement, it is stated. H. T. Clinton, who has been in charge of the agency as well as the publicity department, tendered his resignation, which was accepted. E. P. Chalfant, assistant general manager, will in the future handle agency matters.



GREETING GIVEN THOMAS FLYER NEW YORK-PARIS CAR UPON ITS RETURN TO BUFFALO

FLYER IN HOME TOWN

Warm Greeting Given Thomas, Winner New York-Paris Race, Upon Return to Buffalo

Buffalo, N. Y., Sept. 6—Many enthusiastic welcomes have been received by the Thomas Flyer which won a victory in the New York-Paris contest, but the greatest reception was tendered on the arrival of the car in Buffalo, its home city, yesterday. George Schuster, driver, and George Miller, mechanic, of the victorious machine, were loudly cheered by their fellow citizens.

Probably the greatest interest centered in the speech-making and luncheon given ath the Ellicott Club in connection with the celebration. President E. R. Thomas of the Thomas company was one of the principal figures at this reception. After the luncheon he was called upon to address the many motor enthusiasts assembled. After he expressed his gratitude for the kind greeting, he said: "It is not the car alone that deserves all the credit, because the man behind the wheel is entitled to his share. Praise is also due the men in the shops. Don't tell me that the American mechanic isn't the best in the world! I have had it thrown in my teeth, and by Americans too, that American workmen couldn't do this, but they have. I don't deserve the credit. It is my sublime faith in the ability of the American mechanics to produce a better article than any other country could."

President William H. Hotchkiss of the American Automobile Association was the next speaker. He said in part: "Five years ago any man who said it was possible for an American car to perform this feat would have been declared crazy. This machine could now go back and beat any French car that was ever made. All hail to the man in Buffalo who saw the opportunity, grasped and conquered the world. Within the decade America will have cars contesting with the French cars in every market in the world." President Hotchkiss also referred to the victory of the Pierce-Arrow cars which brought the Glidden and Hower trophies to Buffalo, thereby making this city the world's most famous motor car center, he declared.

Schuster was called upon for a speech and was loudly cheered. Without dilating upon the wonderful feat he had accomplished he proceeded to pay a tribute to those who had assisted as members of the crew at different times and along the route. Miller was then given a royal reception. He carefully explainted the test to which the machinery had been put at different times during the journey.

The luncheon was preceded by a cordial reception for the drivers as they entered the city. Among those who took part in the greeting were President Frank B. Hower, Secretary Dai H. Lewis and the other

officers of the Automobile Club of Buffalo, President E. R. Thomas and Vice-President Edwin L. Thomas of the E. R. Thomas Motor Co., William H. Hotchkiss and others. A stop was made at the automobile club's rooms, after which there was a parade over the principal streets. Then the car was placed on exhibition on a platform at Lafayette square. In the evening the car was taken to the stage at Convention hall, where there was an illustrated talk.

ARGUE POPE DIVIDEND

Hartford, Conn., Sept. 8.—Special telegram—Vice Chancellor Howe, of Newark, today continued for 2 weeks an order directing that parties in interest show cause why the receivers of the Pope Mfg. Co. should not be compelled to pay a third dividend of 25 per cent on the approved claims. Percy S. Bryan, of Hartford, counsel for a creditors' committee representing claims originally in excess of $1,000,000, stated that the receivers had on deposit in the various banks cash in excess of $800,000 and that for the payment of the third dividend of 25 per cent $397,000 would suffice. Sherrod Depu, counsel for the receivers, opposed the application and read a communication from George A. Yule, one of the receivers, who was appointed at the instance of the creditors' committee, in which Mr. Yule stated that he was not in favor of granting the application at present. Receivers' counsel also stated that the time limit for the adoption of the proposed reorganization plan expired today and urged that the outcome of the proposition be awaited. The plan he says provided for the payment of all claims in full immediately upon adoption. The vice chancellor was of the opinion that he ought to give the organization scheme a chance and continued the application until September 22. No objection was raised to the sale of the Indianapolis plant for $200,000. The Pope Mfg. Co. holds 60 per cent of the claim against the Pope Motor Car Co. An order permitting the sale was made.

SHOW ON AT HARTFORD

Hartford, Conn., Sept. 7—The motor car show held under the auspices of the Hartford Automobile Dealers' Association at Charter Oak park in connection with the grand circuit horse races and the Connecticut state fair was accorded an auspicious opening today. The attraction is housed under the roof of the huge skating rink with a floor space of 15,000 square feet. The various exhibitors have made good use of their space and many of the displays are very attractive, particularly that of Brown, Thomson & Co. Among the cars shown are the Knox, Buick, Packard, Stevens-Duryea, Cadillac, Corbin, Oldsmobile, Thomas Flyer, Autocar, E-M-F, Franklin, Elmore, Atlas, Overland, Stanley, Ford and Columbia. The show will continue throughout the week and will be a leader.

BIG DAY FOR HAYNES

Kokomo Celebrates Fifteenth Anniversary of Completion of First Gasoline Motor Car

Kokomo, Ind., Sept. 2—In honor of the fifteenth anniversary of the completion of the first gasoline motor car by Elwood Haynes, motor car owners from central and northern Indiana gathered here today for an all-day celebration. The program was arranged by the Kokomo Automobile Club, assisted by business and professional men of this city, and it is estimated that 5,000 strangers were in the city, many of whom came in motor cars.

It was in the fall of 1893 that Elwood Haynes, after months of experimenting and study, introduced a vehicle operating with a gas motor to the public, held by Kokomo people to have been the first in America. The original car is now on exhibition in the Smithsonian institute at Washington, D. C., and there was much regret that it was not possible to have it on exhibition here today. In 1896 a factory for the manufacture of the cars, which, by this time, had gained the confidence of the public, was established by Elwood Haynes and Elmer Apperson, the present company having been incorporated in 1898. Four years later the partnership was dissolved, the Haynes Automobile Co. and the Apperson Brothers Automobile Co. becoming separate concerns. Each company now has a large factory in this city.

The celebration today was arranged especially as an honor to Elwood Haynes and several hundred motor car owners united to make it a success. Business houses closed for the day and the principal streets were closed to all but motor car traffic. One street was roped off especially for the various events on the program.

But for the bad condition of the roads leading to Kokomo the crowd undoubtedly would have been twice as large as it was. Several miles of fresh gravel and dust several inches thick made motor car driving almost impossible and one party from Indianapolis reported that it required 5 hours to negotiate little more than 50 miles. At 10 a. m. M. E. V. Brigham, chairman of the committee having the program in charge, officially opened the day in the public square and the events followed in rapid succession. There was a large number of entries for each event and competition for nonors was keen.

There were five entries in the egg race, young women from Peru, Indianapolis and Kokomo trying for the prize. It was won by Mrs. Harry Davis, of Kokomo, riding in an Apperson car driven by Edgar Apperson, the time being :24. The obstacle race was interesting, with three contesants, with an exciting finish by Edgar Apperson, who furnished much amusement by running through the obstacles at full speed, reducing them to kindling wood, making no effort to avoid the obstacles. Frank Sweigert, driving a Buick runabout, won the prize, his time being :36. Miss Ruth Newby, of Indianapolis, driving an Oldsmobile, won the prize for fancy driving, a similar event for men being won by Frank Sweigert in a Buick runabout. The women's sprint race was taken by Miss Agnes Davis, of Kokomo, who drove a Haynes ½ mile in :43.

The afternoon program included several ½-mile sprints over an asphalt street, contestants being allowed one square flying start The summary of these events was as follows:

For four-cylinder cars under 30 horsepower—Nelson McLain, Kokomo, driving an Apperson, won; time, :38½.

Haynes cars, owners driving—Paul Smith, Indianapolis, won; time, :40¾.

Free-for-all—Edgar Apperson, Kokomo, driving an Apperson, won; time, :29½.

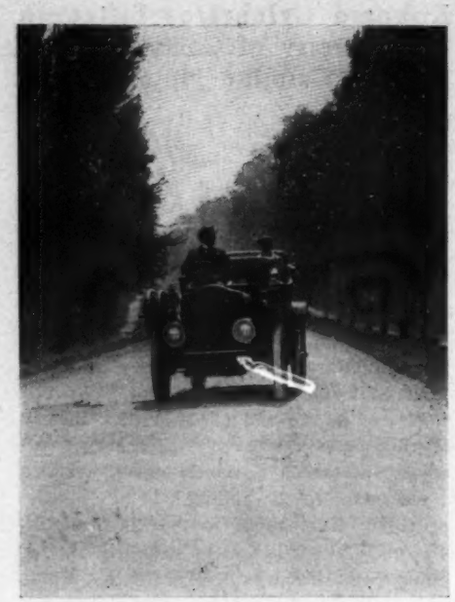
Prior to the afternoon races there was a parade over the principal streets of the city, almost 100 cars participating. There was no attempt at elaborate decoration, although many cars were decorated in flags and bunting. The parade was led by Henry C. Davis, president of the Kokomo Automobile Club, a band on foot and a Rapid Pullman twelve-passenger car carrying members of the Indianapolis Motor Car Co. and their guests. Then followed runabouts and touring cars, three abreast.

PARADE IN KOKOMO, IND., PART OF CELEBRATION IN HONOR OF ELWOOD HAYNES

MONTAUK POINT INTERESTING TO MOTORISTS

By PATHFINDER

NEW YORK, Sept. 7—How many tourists, residing in Greater New York, have explored Long Island from end to end? Fewer, I will wager, than have visited the White mountains, the Maine woods or the Adirondack region. The reason is not far to seek—the New Yorkers have a habit, when they wish to go sight-seeing, of journeying far afield and neglecting the wonderful things which are at their very doors. Leaving Columbus circle, which is to be the starting point of the contest, we journeyed in our 30 horsepower White steamer to the country house of the Crescent Athletic Club on the shore road at Bay Ridge. This is the point on Long Island which is farthest west and it has very appropriately been selected as the place where the contestants in the mechanical efficiency test will begin to travel on a schedule. Continuing to Bensonhurst, we turned from Twenty-second avenue into Kings Highway, which is one of the oldest thoroughfares on Long Island. It winds in and out to Gravesend, then over towards Sheepshead Bay and through the old Dutch settlement of Flatlands. There are a number of old houses on this road which date back to Colonial times. Then we get back to the activities of today as we reach the eastern parkway and travel by the usual route to the great Merrick road, which we follow through Lynbrook, Rockville Center, Freeport, Massapequa and Amityville to Babylon. Then, continuing straight along this same road, now called the Southern boulevard, we pass the magnificent estates which line the shore of Great South bay—through Bay Shore, Islip, Oakdale, Bayport and Blue Point to Patchogue. Now we have reached the great Long Island summer boarder district and we pass quickly through Bellport, Brookhaven and the Moriches to Quogue. Then we come to Good Ground and the famous Shinnecock hills and finally to Southampton, where again we see many magnificent country estates. Then, after passing through a few more towns, the names of which end in hampton, we reach Amagansett. Up to this point the greater part of the going has been over fine macadam roads, with hardly a suggestion of a grade. We also have noted with pleasure that the custom of oiling the roads is wellnigh universal in this section. But east of Amagansett we get something very different—not only a different style of road, but different vegetation, different topography and different scenery from anything we have ever seen before on our travels.



ROAD LEADING TO PATCHOGUE, L. I.

The 20 miles of country from Amagansett to Montauk Point is made up of sand dunes. For miles at a time one does not see any vegetation except a sort of rank, stubby grass. There is no road in the usual sense of the term. The wagons, traveling in the same ruts, have worn a well-defined path and no one need have fear of losing the way. In some places the going is rather heavy and in spots it might even be called swampy, but certainly there is no obstacle which can bar the progress of a good touring car. It is about time to put an end to the myth that "the road beyond Amagansett is practically impassable."

CLIMB TO LIGHTHOUSE AT MONTAUK POINT

FIRST LAND SEEN BY ATLANTIC LINERS

NEW ROAD TO BLUE POINT

There can be no question but that the eastern end of the island is very desolate. Not a habitation is seen and no wagons are met with along the route. Occasionally the road, or to speak more accurately, the trail, approaches close to the edge of the crumbling sand cliffs, and we see and hear the waves breaking upon the shore 40 to 60 feet below our feet. Let nothing more be said about "the waves washing over the road." Possibly a tidal wave would do so, but not the kind that ordinarily corrugate the surface of the broad Atlantic.

The first building we see after leaving Amagansett is the United States life saving station, 5 miles from the town. We proceed an equal distance and then pass another life saving station. Evidently this is a dangerous section of the coast for the mariner. Now our road bears away from

the shore and we skirt the edges of a fresh water pond. Then the Montauk inn comes into view and, after a stiff quarter-mile climb, we alight at this delightful hostelry.

From this vantage point a splendid view of the surrounding country is presented. In the very desolateness of it all there is something akin to grandeur. But those sandy hills were not always bare. Ten years ago, at the time of the Spanish war, somebody blundered and ordered some 20,000 soldiers to pitch their tents here—in a delightfully healthy climate, to be sure, but there was no barrier between these valiant men and starvation, except a single-track railroad. Finally, as we all know, everything was straightened out, but not until a third or more of the men were in the hospital tents. The dwellers in the little settlement on the shores of Fort Pond bay, a half-mile from the inn, will tell you all about the scenes of a decade ago—but the subject is not a pleasant one to pursue further. Besides, no one is supposed to discuss any phases of war, except its "glories."

The settlement of Montauk, where the inn is located, is at the end of the railroad, but not at the end of the island. We have a journey of 6½ miles across the dunes before we reach Montauk Point, on the very extremity of which is the lighthouse. Here we are greeted by the keeper, Captain Scott, who has been "on the job" for 23 years. He looks over our machine critically and remarks: "I s'pose people soon will be traveling here in airships." "May heaven help them if they do not make a landing here," we reply, gazing out toward Europe.

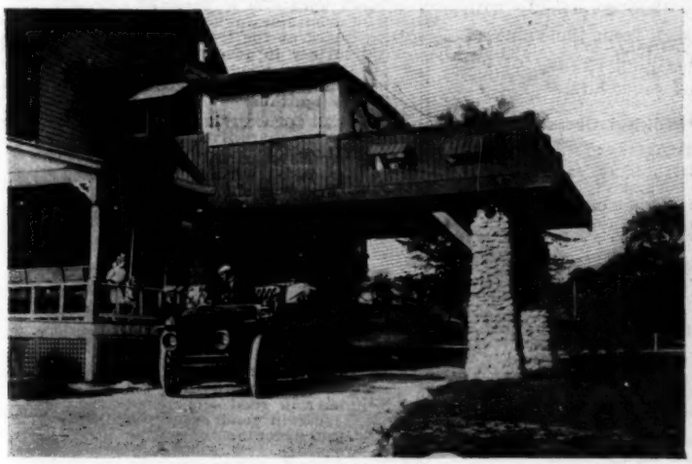
From Montauk Point we retraced our way across the dunes to Amagansett and then along the Southern boulevard to Good Ground. Here we turned off to the north and made our way through Riverhead to Wading river, where the sound comes into view. The topography of the north shore of Long Island is so different from that of the south shore that one can hardly believe that only a scant 6 to 12 miles separates the two coast lines. While the south shore is as flat as the prairies, the north shore has all the characteristics of a mountainous region, which means that the road leads constantly up and down hill and some of the grades, it might be said, require a wide-open throttle, even on our car.

LIGHTHOUSE AT MONTAUK POINT

On we go through Port Jefferson, Setauket, Stony Brook and Smithtown. Then we pass through the grounds of the great state institutions at Kings Park, where maniacs are confined—all except speed-maniacs, most of whom are still at large.

Then we go through Northport, Huntington and Oyster Bay. Just as we are leaving the latter town we catch a glimpse of President Roosevelt and Mrs. Roosevelt as they whirl by us in one of the government White steamers. We toot our horn uproariously, and the president acknowledges this "motor car salute" by tipping his hat. Then, after passing through Glen Cove and Sea Cliff, we come to Roslyn and Manhasset, of Vanderbilt race fame. Keeping straight ahead on Broadway we continue into Flushing, where, in the 2-day contest, the contesting cars will check in for the last time and will then proceed on whatever schedule they may desire to the finishing point at Columbus circle. It is a safe prediction that all who take part in the run, even the veterans of the Glidden tours, will describe the 300-mile journey as the most interesting and picturesque 2-day trip of their experience.

This efficiency test will be held Wednesday and Thursday of next week, and in preparation for it the Montauk Point jaunt has been a popular one. The 13½-mile stretch from Amagansett to Montauk inn is being filled in the low spots with gravel and loam, so that the run from Amagansett to Montauk will be easy. During the last week sixteen different touring cars have been driven from Amagansett to Montauk and to the Montauk Point lightship, and the result of these trips is that the original records have been badly shattered. Among the cars entered are the Cadillac, White, Mitchell, Rainier, Pullman, Stevens-Duryea, Stearns, Knox, Haynes, Maxwell, Stoddard-Dayton and Oldsmobile.



INN OF CAPTAIN GRAHAM, A FAMOUS HOSTELRY

ON THE PLAINS OF HISTORIC MONTAUK POINT

STRIP OF SANDY ROAD

SUGGESTIONS FOR THE MAN WHO DRIVES

FROM the time a car is delivered—in good working order—into the hands of the purchaser, it is for him to cope with the difficulties that may arise. The extent of his success will depend upon: A, the quality of the car; B, the skill of the user; C, the extent of service; D, the roads traversed. At all events, the user of a car will oftentimes find himself unable to quickly locate troubles, unless he follows some systematic course along lines based on "the elimination of the known quantities."

EDITOR'S NOTE—Part I of a paper prepared by Thomas J. Fay, E. E., president Society of Automobile Engineers.

The scheme here given takes into account the various cases likely to arise, distinguishing between the "likely known quantities" and the conditions to be surmised, in view of them. No plan can be so complete as to leave nothing to be desired; but this has been devised in a manner general in its scope, and should prove adaptable to nearly all makes of cars. It is not to be supposed that any one car will develop any considerable number of the troubles suggested. Some of them, however, might arise in connection with any car; and with so many possible troubles, it will prove difficult for the average motorist to quickly locate the trouble to be eradicated, especially under road conditions. The remedies will, in most cases, suggest themselves. For the more difficult problems, reference must be had to chapters dealing with them. It would detract from the value of this scheme to add anything by way of advice or suggestions of procedure.

Case No. 1—Motor Will Not Operate

KNOWN QUANTITIES:

1—Ignition is in working order
2—Compression is normal
3—Carbureter is in normal condition
4—Exhaust valves seat properly
5—Inlet valves seat properly
6—Gasoline in the tank
7—No water in the gasoline
8—Gasoline supply valves open
9—Gasoline piping is clear
10—Mixture intake is tight
11—Carbureter control system is not deranged
12—Gasoline "tank pressure" is normal
13—No water in cylinders due to defective casting
14—Cylinders not flooded with cylinder oil
15—Cylinders not flooded with gasoline
16—Timer is not loose on the shaft

UNKNOWN QUANTITIES

1—Ignition is out of time. This is a condition that could not well obtain in a motor that had been performing in a satisfactory manner up to the time of failure to operate, unless the gear driving the timer should shift enough to alter the timing. That is, assuming the timer itself is in good working order. It is possible that the brushes of the timer might be loosened in such a way as to alter the timing relation.

2—The spark might show all the evidences of working and not work under compression. This could follow a crack in the insulation—porcelain tube—so small as not to be noticed. It might also be due to an excessive spark gap; it must be remembered that a spark in the open air is not positive proof of a spark under compression in the cylinder of a motor. The higher the compression the higher the resistance of the spark gap.

3—If the car comes from the repair shop and fails to work satisfactorily, provided all the known quantities of case No. 1 are as stated, it may be taken for granted that the timing gears were not put back with the teeth meshing in the manner to set the timer in the right relation for timing the spark. In such a case it will be necessary to locate the teeth that should mesh for correct timing and shift the gear relative to the pinion in such a way as to correct the error.

4—It is possible to experience trouble as a result of infected grease in the timer.

Case No. 2—Motor Will Not Operate

KNOWN QUANTITIES INVOLVING THE CARBURETER:

1—Ignition in working order
2—Compression is normal
3—Exhaust valves seat properly
4—Inlet valves seat properly
5—Gasoline in tank
6—No water in gasoline
7—Gasoline supply valves open
8—Gasoline piping clear
9—Mixture intake tight
10—Carbureter control system is not deranged
11—Gasoline tank pressure is normal
12—No water in cylinders
13—Cylinders free of excess lubricating oil
14—Cylinders free of excess gasoline
15—Camshaft not changed in any way
16—Camshaft half-time gears not changed in any way
17—Grease in timer not infected
18—Motor will start after scavenging and priming

UNKNOWN QUANTITIES:

1—Carbureter float punctured?—if of copper
2—Carbureter float "loggy"?—if of cork
3—Gasoline level too low?
4—Gasoline level too high?
5—Float-bowl valve leaking?
6—Nozzle stopped up?
7—Nozzle needle valve worn?
8—Nozzle needle valve wants adjusting?
9—Gasoline strainer clogged?
10—Balance levers of float loose or stuck?
11—Carbureter passageways clogged?
12—Air valves out of adjustment?
13—Valve springs weakened?
14—Lost motion in valves?
15—Valves not free?
16—Leaky gasket in carbureter joint?
17—Change in specific gravity of gasoline?
18—Water in float-bowl?
19—Air vent stopped up?—float-bowl
20—Float guide pin damaged?
21—Gasoline pocket in the intake?
22—Hole in nozzle too small?
23—Hole in nozzle too large?
24—Defect in hot air piping?
25—Initial air opening excessive?

Case No. 3—Motor Will Not Operate

KNOWN QUANTITIES INVOLVING THE COMPRESSION:

1—Ignition in working order
2—Carbureter in normal condition
3—Gasoline supply adequate
4—Compression cocks closed
5—Motor cranks free
6—Motor starts with difficulty
7—Weak on the power stroke
8—Power falls off overmuch

UNKNOWN QUANTITIES:

1—Considerable falling off of compression?
2—Leaky inlet valves?
3—Leaky exhaust valves?
4—Worn piston rings?
5—Worn cylinders?
6—Valve stems deformed?
7—Valve stems in tight holes?
8—Valve stems gummed up?
9—Valve seats pitted?
10—Valve springs' temper drawn?
11—Valve lift adjustment changed?
12—Crack in cylinder?
13—Piston rings broken?
14—Piston rings in tight slots?
15—Piston ring slots all in line?
16—Cylinder head covers not tight?
17—Crack in piston?
18—Spark plugs not screwed in tight?
19—Intake stopped up?
20—Broken valve stem?

Case No. 4—Motor Will Not Operate

KNOWN QUANTITIES, INVOLVING THE IGNITION:

1—Compression is normal
2—Carbureter in normal condition
3—Battery in good order
4—Wiring free from trouble; battery
5—Timer in good order
6—No spark at trembler

UNKNOWN QUANTITIES, INVOLVING THE IGNITION:

1—Trembler contacts worn?
2—Trembler contacts not stuck?
3—Trembler not adjusted properly?
4—Leak in primary wiring?
5—Primary wiring open circuited?
6—Primary coil short circuited?
7—Primary electrodes partially short circuited?

Case No. 5—Motor Will Not Operate

UNKNOWN QUANTITIES, INVOLVING THE IGNITION:

1—Compression is normal
2—Carbureter in normal condition
3—Spark at the trembler
4—Battery in good order
5—Timer in good order
6—Primary wiring in good order
7—No ignition

UNKNOWN QUANTITIES, INVOLVING THE IGNITION:

1—Secondary wiring short circuited?
2—Secondary wiring open circuited?
3—Spark plug short circuited?
4—Spark gap excessive?
5—Secondary coil open?
6—Secondary coil short circuited?
7—Ground contact not good?
8—Trembler sluggish?
9—Trembler screw loose?

Case No. 6—Motor Will Not Operate

KNOWN QUANTITIES, INVOLVING THE BATTERY:

1—Compression is normal
2—Carbureter in normal state
3—Timer in good order
4—Wiring in good order
5—Ground contact of wiring good
6—No spark at the spark plug
7—No spark at the trembler
8—No spark at the timer
9—No spark across the battery—storage—terminals
10—Very old or much used dry battery

UNKNOWN QUANTITIES, INVOLVING THE BATTERY:

1—Battery dead?
2—Storage battery sulphated
3—Storage battery fully discharged?
4—Storage battery "mud" in cells?
5—Storage battery short circuited?
6—Storage battery active material fallen out?
7—Storage battery very cold?
8—Storage battery electrolyte evaporated?
9—Storage battery electrolyte weak?
10—Storage battery electrolyte strong?
11—Storage battery jar broken?
12—Dry cells dried out?
13—Dry cells, zinc eaten away?
14—Dry cells, chemical dissipated; transformed?
15—Dry cells, contact with terminals not good?
16—Primary batteries, run down?
17—Primary batteries, "polarized"?
18—Primary batteries, elements eaten away?
19—Primary batteries, solution neutralized?
20—Primary batteries, solution evaporated?
21—Primary batteries, jar broken?
22—Primary batteries, inter-cell leakage?
23—All batteries, local action?
24—All batteries, impurities?
25—Too small for the work?
26—Not enough cells in series or too many in series?

Anything that would materially lower the resistance of the grease, as particles of metal, carbon or other conducting media, would tend to cause trouble.

5—If the wiring is in bad shape, it will be possible to note a spark in the open air that might be very feeble or intermittent under compression, since it might be the case that the leakage across the wiring system would manifest itself with the compression and not show up with the spark gap in air.

6—Carbureter troubles may be distinguished from ignition troubles by making an artificial mixture in the cylinders. Cranking with the vents open until enough fresh air has been passed through the cylinders to assure complete scavenging; then by priming through the vents and turning the engine over with the ignition switched on, it will be possible to note if the spark and timing are truly in working order. If the cylinders fire with the priming, the carbureter wants adjusting in some way or other.

7—If a car has been working, and, after repairing, fails to work in the usual manner, assuming all the known quantities are as before stated, and the timer is in the correct relation and in good working order, it is probable that the camshaft has been put back with the teeth of the half-time gears out of correct mesh. This will demand that the half-time gears be remeshed, in accord with the requirements.

8—If a car has been working, and, after repairs, it fails to come up to the mark, then, provided the timer is properly related and the half-time gears of the camshaft show they are right, as regards meshing, it will be well to note if the cams are keyed on; if they are, and in the act of repairing one or more of them were put back wrong, the results will be undesirable and should be remedied.

9—If a motor has been provided with a new camshaft, and the known conditions are all as before stated, failure to perform properly will denote that the key-way for the half-time gear is not in the right place, with respect to the markings on the gear; that is, if the gears show markings for the correct mesh and the same markings were held to in inserting the new camshaft.

HOW TO SECURE A PATENT—EXPORTS AND IMPORTS

Belgium's Patent Laws

Every discovery or improvement susceptible of being exploited as an article of industry or commerce is considered a patentable invention under the law of Belgium. To obtain a valid patent, application must be made before public use in Belgium or before a description of the invention is published in a printed publication. Description in a printed publication due to a requirement of law will not invalidate a "patent of importation." In all cases the patent is granted to the inventor or his assignee.

The Belgian law provides for three kinds of patents. The first is for patents of invention, the duration of which is 20 years, starting from the date of filing. The second kind are known as "patents of importation." The duration is limited always by that of the patent for the same invention previously granted abroad for the longest term, but in no case to exceed 20 years. "Patents of improvement" comprise the third class. They end at the same time with the principal patent to which they relate. The taxes on patents in Belgium are known as annuities. The first annuity is $1.93, the second annuity is $3.86, and so on, with an increase of $1.93 for each year. No fee is required for "patents of improvement" if they are granted to the grantee of the principal patent.

In order to secure a patent the inventor must file at the office of one of the provincial governments or at the office of a district commissary an application accompanied by the following, under sealed envelope: The description of the invention; the drawings, models or specimens necessary for understanding the description; a duplicate, suitably certified to conform with the original of the description and the drawings; a memorandum of the documents filed. The above must all be dated and signed. There must be annexed to this deposit the receipt for the first annuity of $1.93.

The application must be in the French, Flemish or German language. If not in French it must be accompanied by a translation in French if the applicant is not a resident of Belgium, and must indicate the name, given names, profession and residence, real or elected, of the inventor in Belgium, and give an exact and concise title of the invention. The description must give a complete knowledge of the invention and conclude with definite claims. The drawings, in duplicate, on tracing cloth, must be in ink and on the metric scale and indicate by a different shade the characteristic parts of the invention. All the parts of the application except the drawings must be signed by the applicant or his representative, whose power of attorney must be filed. The applicant need file samples only when they are necessary for understanding the description. The patents are granted without preliminary examination. Patented inventions must be worked in Belgium within a year from beginning of working elsewhere and must not be discontinued for more than 1 year.

Motor Car Lock Is Wanted

A motor car lock which will be simple and thief-proof would be an invention which would appeal to Detroit motorists just now, and the wonder is that some such device has not already been included in the regular equipment of some make of car. It may be true that in some cities the removal of the starting crank or a spark plug or some other part of the mechanism is a guard against theft, but Detroit thieves are too often graduates of the local factories and carry a few handy tools along with them. Several instances have occurred of late in which the thief has supplied the spark plug himself. In one day last week the Detroit police received news of six thefts of motor cars. Three of the cars were discovered that evening. The remainder have not yet turned up. Now the motoring fraternity of Detroit is determined to break up this pernicious practice of "joy riding."

Figures From Washington

Washington, D. C., Sept. 5—The latest compilations of the bureau of statistics show that during July last 238 motor cars, valued at $588,560, and parts to the value of $55,341, were exported to various foreign countries, as against 345 cars, valued at $727,391, and parts, valued at $68,934, exported during the corresponding month of last year. During the 7 months ending July the number of cars exported decreased from 2,052, valued at $3,825,969, in 1907, to 1,528 cars, valued at $3,223,166, in 1908, while the value of the parts exported likewise dropped from $419,521 to $390,775 during this period. During July last cars and parts were exported to the following countries: United Kingdom, $273,396; France, $53,602; Germany, $22,744; other Europe, $54,555; British North America, $191,927; Mexico, $11,726; West Indies and Bermuda, $5,885; South America, $7,003; British East Indies, $5,497; British Australasia, $4,362; other Asia and Oceania, $11,247; Africa, $1,930. The import figures are interesting as showing the great drop in the prices of foreign cars. During July, 1907, sixty-eight cars, valued at $224,510, were imported. During July last the number had increased to 115, the value of which was only $224,578. Thus it will be seen that while the number of cars imported in July last was forty-seven more than in July a year ago, their value was only $68 more than the value of the cars imported in July a year ago. During the 7 months' period ending with July the number of cars imported in 1907 was 559, valued at $1,827,590, while in 1908 the number was 558 and the value $1,170,624. The cars imported in July last were received from the following countries: United Kingdom, 5, valued at $15,928; France, $141,037; Germany, $2,731; Italy, $46,272; other countries, $18,610. Imports of parts fell in value from $55,752 in July, 1907, to $47,369 in July last, and from $466,637 to $298,755 during the 7 months' period. These figures should furnish plenty of food for thought by those makers who are either exporting cars or considering doing so.

The Readers' Clearing House

EDGE ON LONG-STROKE ENGINE

LONDON, Eng.—Editor Motor Age—Referring to a letter from Motor Age asking why the long stroke is severe on the mechanism and tires, I think we first must deal with the question as to why competitors in recent events have started developing the long stroke. Ordinary commercial engines have got down to a reasonable proportion between stroke and bore; in fact, I think every up-to-date motor car maker was considering quietness, smoothness of running and economy in tires and mechanism almost before everything. Then the Royal Automobile Club of England and the Automobile Club of France both suddenly started rating engines for competitive purposes by the size of the cylinders only. The result of this was that the far-seeing manufacturers who understood their business at once realized that these two clubs had brought out a formula which placed no restriction on stroke. Experiments were at once carried out and it was then found that increasing the length of the stroke was almost as good as increasing the bore.

In developing the formula, diameter of cylinders squared multiplied by number of cylinders, divided by 2.5, the compilers of this formula no doubt assumed that long-stroke motors would be run at slow speed; or, in other words, the speed would be inversely proportional to the length of stroke, and that the limit to speed and stroke—that is to say, piston speed—would be the strength of the moving parts. This, however, is not the limiting factor, for it is possible to make these parts of material of such excellent quality which correctly disposed within the parts insures that their actual strength is much greater than the stress which they are called upon to withstand with the motor running at maximum speed.

There are two chief factors which limit the engine speed: First, the actual rubbing velocity of the pistons within the cylinders; second, the rapidity of actuation of the valves and the speed with which the gases can be taken in and expelled from the cylinders. With the piston speeds at present in vogue, even in races where they are maintained at the highest limit, it is possible to get over the piston lubrication difficulty by judicial lubrication at the expense of a smoky exhaust. The second factor, therefore, is the chief limitation so far as the engine speed of racing motors is concerned. There are other factors which limit the speed, such as the rate of ignition, inflammation and combustion of the gases, the speed of the ignition apparatus, etc., but the effect of these things is not so great as those above mentioned.

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems and invites a discussion of pertinent subjects. Correspondence is solicited from subscribers and others.

The rapidity of actuation of the valves does not depend upon the length of stroke of the motor, but since the speeds of motors of different strokes but of the same bore have been found to be practically the same, it follows that the powers are approximately proportional to the length of the strokes. Racing motors which have a limited piston area and from which it is desirable to obtain the maximum power have therefore to be fitted with excessively long strokes. The formula rates a motor with a short stroke the same as one with a long stroke, provided the piston area is the same in both, and although the performance of the long-stroke motor, so far as actual horsepower is concerned, is undoubtedly better than the one with the short stroke, yet by rating their performances should be similar. Actual experience teaches that the formula does not give a true rating, and if the rating is to be a measure of the horsepower developed the length of stroke must be introduced into the formula.

A formula of the type $D^2NS\ C=BHP$, where S is the stroke in inches and C a suitable constant, would immediately discourage the long-stroke motor, and the more rational "square engine"—equal bore and stroke—would again appear in racing cars. The reasons for wishing to handicap the long-stroke motors lie in the motors themselves. They present many difficulties in design and running, and are not so well adapted for driving motor cars as are engines with shorter stroke.

The chief objections to excessively long strokes are: A, size of engine; B, vibration; C, weight of engine; D, noise from engine; E, lack of flexibility; F, difficulty of starting; G, danger from preignition; H, necessity for stronger shafts, etc., in transmission gear; K, increased wear and tear on tires. A—Size of engine: Long-stroke engines must have proportionately long connecting rods, and on this account the distance from the center of the crank to the top of the cylinders is considerable, and the oil base must also be very deep to allow for the swing of the crank. In order to get sufficient clearance between the oil base and the road it is necessary to carry the crankshaft higher in the frame, which necessitates raising the gearbox, clutch and most of the other parts. This raises the center of gravity of the car considerably, and thus the car is more easily overturned and skids more readily. The engine being built very high necessitates a higher dashboard and bonnet, and the seats must therefore be raised to give a clear view, which also raises the center of gravity of the car. The increased space required for the crank to swing in necessitates the use of a larger crankcase, which occupies space usually taken up by the magneto, water pump, etc., and these have to be placed in more restricted positions where they are less accessible.

B—Vibration: However well balanced an engine may be, there is always a slight amount of vibration. This need not be very much with short-stroke motors, but with excessively long strokes it becomes very serious. It is due to the inertia forces of the reciprocating parts causing the crankcases and crankshafts to distort and "whip," and in addition to the discomfort of riding in the car there is the grave danger of the crankcase breaking through fatigue due to the vibration.

C—Weight of engine: Excessively long-stroke motors are exceedingly heavy. They are very high, the crankcases are very large to accommodate the swing of the crank, the valves must be large so as to allow the large quantity of gas easy ingress and egress, and the valve ports, pipes, cylinder heads, etc., must be in proportion. The reciprocating parts must be made heavier than those for equal bore short-stroke motors. It is also necessary to employ a heavier design of crankcase and oil base in order to make these strong enough to withstand the stresses due to high speeds combined with long strokes, and in order to withstand the vibration the crankshafts must be made considerably larger in diameter. These conditions result in an engine which is considerably heavier than an engine of equal power with a shorter stroke and greater bore.

D—Noise from engine: This is due to vibration and valve actuation, and is so well known that nothing more need be said about it.

E—Lack of flexibility: The long-stroke motor can never be flexible. The compressions require so much effort to overcome them that the necessary weight of flywheel is prohibitive.

F—Difficulty of starting: In order to turn the long-stroke engine by hand it is necessary to have a half-compression gear even for engines of comparatively small bore.

G—Danger from preignition: This is considerable, for although the pressure in the cylinder due to the preignition may be no higher than that in a short-stroke motor under the same conditions, yet the crank arm being longer and the connecting rod being in a more oblique direction, the actual stresses induced in the parts are considerably higher.

H—Necessity for stronger shafts, etc., in the transmission: Owing to the uneven torque due to the long stroke, and the wide variation between maximum, average and minimum torque, it becomes necessary to design the shafts to suit the maximum stress to which it is considered they will be subjected. Increasing the size of these shafts also adds to the weight of the chassis.

K—Increased wear and tear on tires: This is due to the uneven torque of the long-stroke motors, the increased weight of the motor and chassis, and the greater amount of skidding between the tires and the road.

I think you will agree with me that the above is a good case against the abnormally long-stroke motor, and that it has no reason for existence except for the purpose of getting the better of a formula which is inadequate for present-day conditions of motor car engine manufacturing. The ordinary purchaser can always reckon that his tire bill will go up in accordance with the increased length of stroke.—S. F. Edge.

RAILROAD CROSSING SIGNAL

New Castle, Ind.—Editor Motor Age—I was exceptionally interested in your editorial in issue of August 27 on signals for grade crossings of railroads, and, as a result, am enclosing what I would consider a suitable sketch for a railroad signal. This is a triangle, showing the words "railroad crossing 150 yards"; in the center of the triangle is a light to be used at night. The sign would be a red ground with white letters.—Chester L. White.

Motor Age is very glad to receive this suggestion, which it considers a good one, and sees no reason why automatic attachments by magnetic means with electric current could not be used, whereby the lantern can be turned a quarter revolution on its support. The two opposite sides of the lantern could show a green light, the other two red lights, and with the electric magnetic arrangements the lantern at night could ordinarily show green, but when a train approached within a certain distance of the crossing the electrical connection can be such as to revolve the lantern through the 90 degrees arc, bringing the red light into view. This would make a perfect system for night work at dangerous crossings.

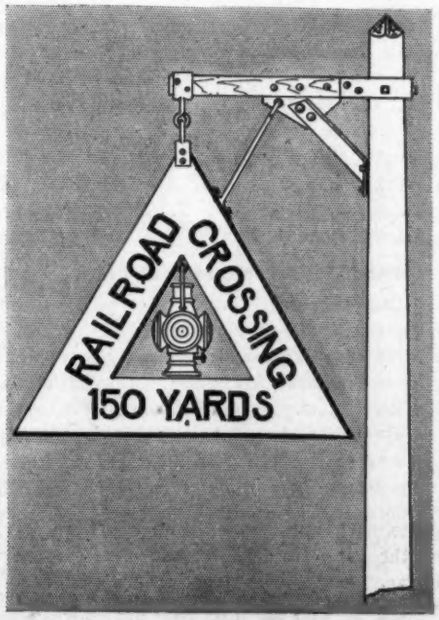
EIGHTY TO ONE AT DENVER

Denver, Colo.—Editor Motor Age—I am an old subscriber of Motor Age and derive much solid comfort and information from its columns. In the issue of August 13, under the caption of "Many Cars in Pittsburg," appears the following: "Pittsburg now boasts more motor cars than any other city in the United States. The total value of the gasoline propelled stock in the Smoky city is about $5,000,000, according to recent investigations. There are exactly 1,198 machines, as reports of City Treasurer John F. Steel show, in use and there are 100 more cars stored away in garages which are not being used this season. Since February 1, 1908, city licenses have been taken out for 842 machines of the larger type and 356 smaller ones. The average value of the larger cars is placed at $4,000 and the smaller machines at $2,000. Pittsburg is constantly buying a larger proportion of large and high-priced machines than any other city in the country," etc. I have waited a little while for your so-called Smoky city to enjoy this boast before replying to the article and giving you some facts as to what the Pittsburg of Colorado—Denver—can mildly tell and beat you to it in the motor car line. The last license given out by our city treasurer today is No. 2,626. This includes 300 motor cycles, and deducting this number we have in round numbers 2,326 motor cars in Denver along at this time, and the number is growing quite satisfactorily and gives us one good motor car to every eighty of our population, and we are not walking either. There are easily fifty cars stored away not licensed. Our winters here are so open and mild that virtually all of our machines are kept going the entire year. I have gone to considerable trouble to get accurate data as to the motor car situation in Denver, and my very careful investigation gives me the following information:

100 motor cars at	$6,000 and above.	$ 600,000
400 motor cars at	5,000	2,000,000
500 motor cars at	4,000	2,000,000
500 motor cars at	3,000	1,500,000
800 motor cars at	1,000 to $3,000..	1,200,000
50 motor cars stored away at	$3,000.	150,000
Total cost—not value.....		$8,450,000

Since January 1 the exact number of motor car licenses issued is 711. The freight bureau here informs me "that for the 12 months ending July 31, 1908, there were 241 carloads of motor cars received in Denver from eastern territory." The natural roads in Colorado are hard to beat outside of Eden. We are now spending millions of dollars on our streets and boulevards of Denver and the roads throughout the state. In a short time we will have a road running directly through the state from the north to the south boundaries, and another road running from the center of Denver through the state to the west line of Kansas. Denver is justly accredited as being the one city in the United States that leads in the number of motor cars on a population basis.

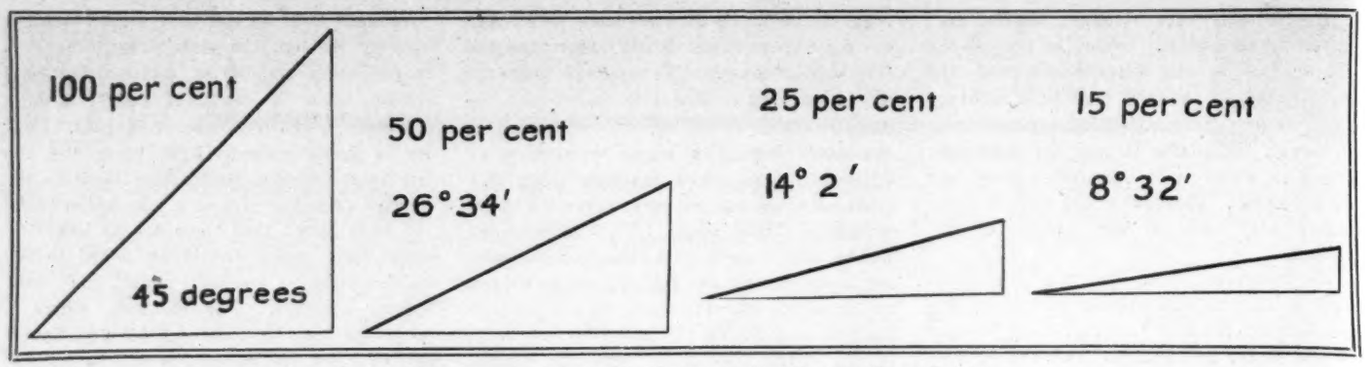
I have found that there are at least 150 motor cars, which should be added to the above number, carried under the same license numbers. For instance, where a party has more than one car, his first license will be 2,626, the second car will be 2,626A, the third car 2,626B, and so on. In several cases the duplicate numbers run up to as high as E and any number to B, and A is common. These extra cars will average $3,500, or a total cost of $525, making a grand total cost of motor cars in the only Denver of $9,000,000 in round numbers. We have several cars that cost as high as $10,000 each and one that cost $28,000.—Charles H. Smith.



WHITE'S SUGGESTED RAILROAD SIGN

APPERSON ON RACING

Kokomo, Ind.—Editor Motor Age—No one can justly dispute the fact that the Apperson brothers have been longer and more continuously identified with motor car racing than any other motor car manufacturers in this country. On Thanksgiving day, 1895, the first regularly organized motor car race held in America took place in Chicago under the auspices of the Times-Herald. Elmer Apperson, senior member of the present firm of the Apperson Brothers Automobile Co., of Kokomo, Ind., drove one of his cars in that race. For 13 consecutive years motor cars designed and built by the Apperson brothers have been prominent contestants in all motor car competitive events held throughout the country. A year ago the Apperson brothers announced they would enter no more cars in racing contests on circular tracks as now constructed, and while the Apperson name has since then been used by track race promoters for advertising purposes, it was not done with the knowledge, sanction or approval of the Apperson Brothers Automobile Co. Since the decision to stay out of track races was reached, many hundreds of dollars have been offered by track race promoters to the Appersons to induce them to enter their speedy cars in various race meets. But all to no avail. Believing track racing with the present type of high-powered motor cars is extremely dangerous for drivers and spectators, and for the cars themselves, Apperson brothers will closely adhere to their adopted policy of staying out of such contests, and no Apperson car, no matter by whom owned, will compete in such contests with their approval. Experience is the best teacher, and the Appersons have had much experience. While the racing of high-powered cars in road events looks to be extremely dangerous, statistics prove that sport of that nature is not nearly so hazardous as it seems, and that the number of serious accidents which occur is very small as compared with those in track races. It



DIAGRAMS REPRESENTING DIFFERENT DEGREES OF ROAD GRADES

is also a known fact that the public likes to witness road races.

Apperson brothers will continue to enter their cars in all kinds of road events when held under the right conditions, but they will not enter any cars, either in the Vanderbilt race on October 24 on Long Island, or in the grand prize race at Savannah on November 26. The company's reasons for staying out of these two proposed contests are numerous, but the most important are:

1—The absurd and unnecessary fight for the control of motor racing now on between the American Automobile Association and the Automobile Club of America has created a most unsatisfactory condition of affairs, and the Apperson brothers, instead of taking sides actively with either organization, intends, for a while at least, to stand aside from all participation in this "mess," and they believe that if all other motor car makers and dealers will assume a similar position the A. A. A. and the A. C. A. would soon find themselves in the position of a hungry man without a job, and that some right way for the proper control of motor car racing, in response to the present demand of the public, the manufacturer and the dealer would soon be devised.

2—Briefly stated, too many big races have this year been held or are yet to be held, under all of the threatened "blackballing," "hot-air" bluffs, etc., of the two would-be race-controlling and warring organizations. Road racing, within reasonable limits, is good for all concerned. Its results are beneficial to the maker in that it brings out quickly weak points in design or construction that can easily be corrected. It creates a general interest in the industry among thousands of possible buyers. It gives a spectacular and inexpensive amusement to hundreds of thousands of people. But "Jones pays the freight"—in other words, road racing costs money—and a lot more money than the uninitiated may suppose. Road racing, if a competing car is built right, is good advertising. The cost of advertising, of necessity, is added by all makers to the cost of production of their cars. To cost of production must be added a reasonable profit per car sold by the maker. Therefore, the public, the buyer of a motor car, must pay the cost of road racing events. This the buyer can well afford to do, since the results of such events surely makes it possible for him to buy a better car for his money—a car which, through the medium of these events, has shown its weakest qualities, and which any maker of experience and with a reputation to sustain, and a large cash investment to protect, is quick to correct. But one, or possibly two, big road races each year, held in different parts of the country, is necessary to accomplish the desired result, and it can be done at a much lower expense to the factory and the buyer than it can possibly be done under the present complicated state of affairs recently brought about by the A. A. A. and some local trade organizations in the larger cities, which are "playing their own game" independently of both the A. A. A. and A. C. A. The good of the industry and the best interests of the public urgently demand a quick and equitable "get together policy" on the part of all concerned at present.—Apperson Brothers Automobile Co., George H. Strout.

MANUFACTURE EXHAUST CUTOUTS

Van Wert, O.—Editor Motor Age—Somewhere I saw an ad for an open exhaust valve to clamp on exhaust pipe. Can Motor Age tell me where I can secure this valve?

There are a great many of these valves manufactured and it is impossible to say what one you saw an advertisement of. Following are some of the manufacturers of valves of this nature, and communication with them will doubtless bring you all the information you want: Gabriel Horn Mfg. Co., Cleveland, O.; Garage Equipment Co., Milwaukee, Wis.; Gray-Hawley Mfg. Co., Detroit, Mich.; Noonan Tool & Machine Works, Rome, N. Y.; Powell Muffler & Timer Co., Utica, N. Y.; Motor & Mfg. Works, Geneva, N. Y.

THREE-POINT MOTOR SUPPORT

Cambridge, O.—Editor Motor Age—During the last 2 or 3 years the use of three-point suspension and the unit power plant in motor cars has caused not a little discussion among manufacturers and a great deal among the readers, and I would like Motor Age to show, in the Readers' Clearing House, how a motor can be suspended from four points on the frame, without danger of having its alignment destroyed by strains and road shocks. What is the opinion of Motor Age of the unit-power plant as well as that type of construction in which the transmission set is mounted on, or made integral with the rear axle? Will Motor Age explain how percentages of road grades are measured?—Reader.

The design of cars, like most other things, is a series of compromises. Three-point suspension and the unit-power plant have many undeniable advantages, but they also have disadvantages which some designers appear to think more weighty. If one attempted to make a car in which every part was designed in the one and only correct way, the result would simply be a nightmare. The really good car is the one which, avoiding positive mistakes, embodies as many good features as will fit into a harmonious whole. The four-point suspension may easily be made rigid enough to withstand the strains due to road shocks. In answer to the grade question, there is a pretty general impression that a 100 per cent grade is straight up and down, 50 per cent at an angle of 45 degrees from horizontal and so on. In reality, the per cent grade is simply the number of feet of rise to each 100 feet horizontally. Thus, a 100 per cent grade is a rise of 100 feet in each 100 feet, 50 per cent a rise of 50 feet in each 100.

ALGONQUIN'S HILL GRADES

Chicago, Ill.—Editor Motor Age—I have heard a great deal of talk around the motor colony since the Algonquin hill-climb relative to the performances of cars on the hills, and would like to know what are the grade percentages for the Perry hill and also for the Phillips hill. According to some of the reports, the Perry hill has a very severe grade. In the Algonquin hill-climb were the cars allowed to use any gear ratio they desired, and was it allowable to change the gear ratio after the morning and before the afternoon climb?—H. Cohen.

The grades of the Perry and Phillips hills are given in the accompanying illustrations, reproduced from original drawings by Frank Trego, of the Apperson agency, whose electric timer was used in the climb. On the Perry hill, shown in the left half of the illustration, the first 87 feet have a grade of 5.22 per cent, which becomes 12.2 for the next 370 feet, then drops to 6 per cent for 180 feet, only to rise to 8.4 for 165 feet and to finally drop to 4.95 for the last 100 feet. This hill was taken from a standing start. In the Phillips hill the

grades are less and the distances longer. The hill is ½ mile and has grades ranging from 2.2 per cent to 5.5 per cent. It is true that in one part of the hill the grade reaches 9 per cent, but the distance is too short to be cared for in a general plan of the elevation. In the Phillips hill cars were given a flying start of 1,032 feet over a level course. Both hills have ugly and treacherous curves; Perry hill is in the form of an S and Phillips hill like an open fish hook with the curve at the top. The contesting cars were garaged immediately after the morning climb and until the start of the afternoon climb, no opportunity being given to change gear ratios.

REPAIRING WALDIN'S FLOAT

Nashville, Ill.—Editor Motor Age—In Motor Age, issue of August 3, the Readers' Clearing House presents the case of a leaky carbureter by Mr. Walter Waldin, and asks for the experience of others in curing this trouble. I have had numerous cases of the same symptoms, and I have never found the trouble to be in the height of the float, and never found but one case of this kind in which the trouble was caused by trash under the float-valve. If the float-valve seats itself properly there can be no leak, and I have always found the trouble to be in one of two places, and sometimes in both of them, namely, the float-valve needed to be reseated, or the metal lining on the inside of the float and the guide stem on which it works has become roughened, or both of them. If Mr. Waldin will reseat the float-valve and then take a piece of 0000 sandpaper—not emery—and polish the lining of the float and the stem on which it works, I think his trouble will disappear at once, unless he has changed the position of the float, in which case he should put it back to its proper position as intended by the manufacturer. If the leak should be in the float chamber itself, it can be stopped by making a new point at the bottom, where it is secured to the body of the carbureter, and I would suggest that Mr. Waldin examine this point first, and if he does not find the trouble there he will most certainly find it as stated above. This method of procedure has always cured them for me.—John G. Peebles.

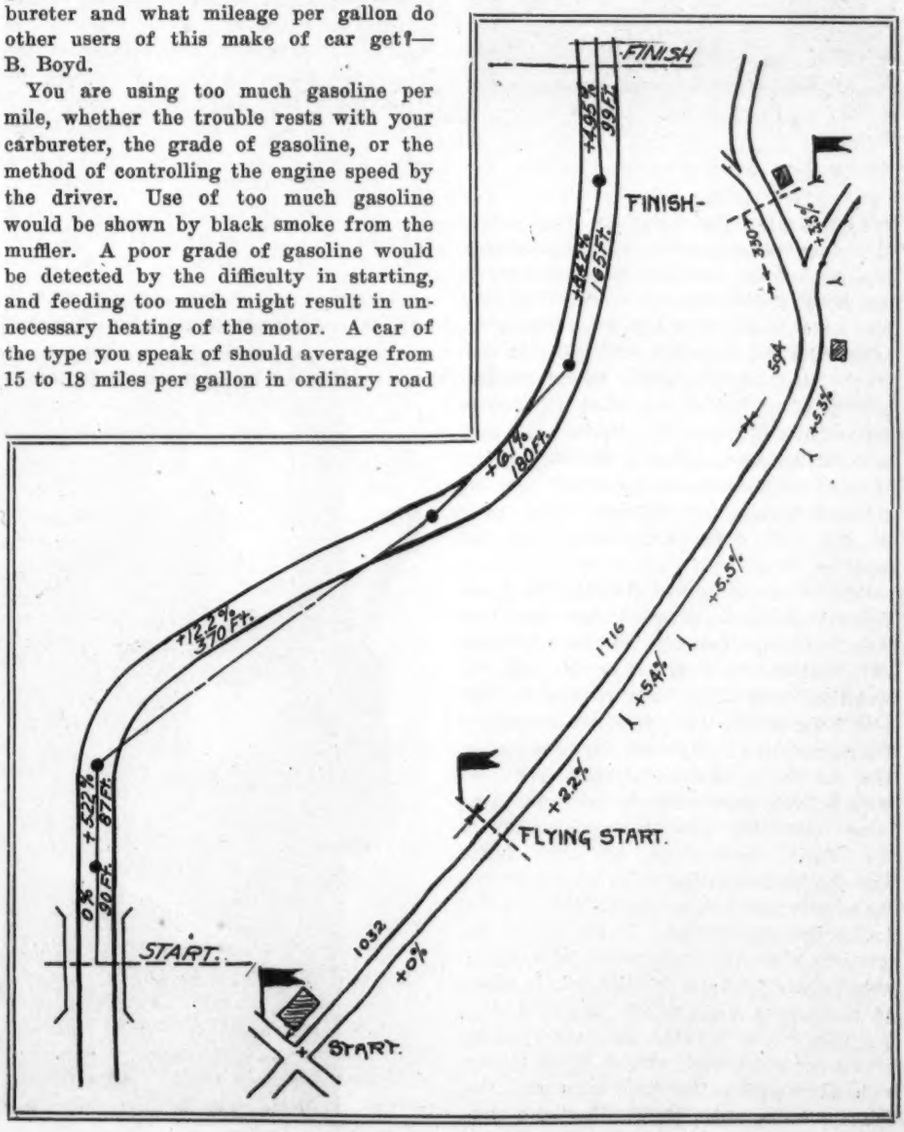
NEVADA CAR PERFORMS

Council Bluffs, Ia.—Editor Motor Age—Knowing that Motor Age is always interested in new stunts in the motor car line, I call your attention to a feat performed by a car known as the Desert Flyer, built by the Nevada Motor Car Co. This car has been traveling through this western country for the past 30 days and recently the driver, Mr. A. J. Bertsky, moved a steam pile driver and hoist weighing 8 tons around on the streets here and pushed it into a vacant lot, where four horses failed. I witnessed this performance and, being interested, learned from the driver that the car weighed 7,000 pounds and the load carried, according to the weight receipt, was 10,870 pounds. The motor is rated at 85 horsepower, with 6 by 6½-inch bore. The strangest thing of all is the transmission, which is a friction and planetary combined, as I have never heard of a friction transmission being used on such a heavy car, and to move the load it simply made me and many others sit up and take notice. Later Mr. Bertsky invited me to go to Omaha. We had sixteen passengers and went up Harney and Farnam streets, both stiff grades in the downtown section, the Warner speedometer running from 8 to 20 miles per hour and always in high gear. The drivers seemed to have absolute control of speed by throttling. I am operating two White steamers in rent service and drive a good deal, but never have seen anything like this performance. This Desert Flyer can be run on railroads without changing the wheels. It certainly is a wonder!—Charles Pendleton.

USES TOO MUCH FUEL

Bath Beach, N. Y.—Editor Motor Age—In my 1906 30-horsepower Pierce-Arrow, which in every respect is perfect, 1 gallon of gasoline is consumed for every 7 miles traveled. When new I went 9 miles per gallon. What is the matter with my carbureter and what mileage per gallon do other users of this make of car get?—B. Boyd.

You are using too much gasoline per mile, whether the trouble rests with your carbureter, the grade of gasoline, or the method of controlling the engine speed by the driver. Use of too much gasoline would be shown by black smoke from the muffler. A poor grade of gasoline would be detected by the difficulty in starting, and feeding too much might result in unnecessary heating of the motor. A car of the type you speak of should average from 15 to 18 miles per gallon in ordinary road work. In correcting the abuse, the best thing to do is to clean the carbureter, try the float to see if it leaks, and then adjust to the motor according to the rules for same, as published by the George M. Pierce Co. This will, undoubtedly, result in increasing your mileage, at least, a couple of miles per gallon. In driving, it may be possible to use a little more advanced spark with the throttle more closed than what you have been in the habit of doing. Frequently the gasoline consumption of the car is due to some loose motor bearings or insufficient lubrication. It seems, however, that as the car is perfect in every respect, the trouble does not rest here. You have, undoubtedly, looked into the matter that you get the amount of gasoline you pay for, and that the "short measure" game is not being tried on you. It would be well to make a careful examination of the gasoline tank and all connections to the carbureter to insure that there is not a leak in the line. Occasionally brakes dragging, a tight bearing on the running gear or some other running gear trouble will cause these troubles.



GRADES ON PERRY AND ALGONQUIN HILLS

Recent Motor Car Development

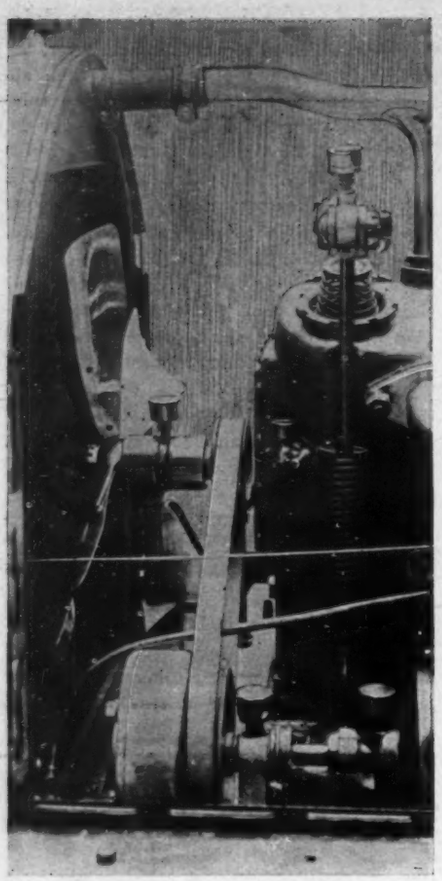


FIG. 1—LOCATION OF FAN PULLEY

THE Dayton Motor Car Co., Dayton, O., since its inception in 1905 a consistent exponent of the medium-priced machine—the $2,000-$2,500 type—has ready for next year as a leader in the forward march of price reduction three types of cars that embrace the $1,500-$2,500 manufacturing gamut, all of which are alike in chassis design, in the grade of material used and in the finish given, differing only in the size of parts to meet the demands for cars of different horsepower, different speed proclivities and different passenger-carrying capacity.

Few of the 1908 Stoddard-Dayton principles have been discarded, but many of them have been amplified in minor details, all of which are footsteps on the path of evolution along which Designer Edwards has been forging the car since its inception. The valve-in-the-head motor, with one rocker arm for the intake and exhaust valve of each cylinder remains unchanged; the contained crankcase lubrication shows only a few detail modifications; the cone clutch with its leather facing is in place; so are the selective gearset, the shaft drive and the double ignition system. In the list of alterations come the employment of integral waterjackets for each cylinder pair in place of the copper waterjackets employed during this season. These new waterjackets have large end plates secured by set screws with fiber gaskets between them and the cylinder walls, which plates allow of a simple twin casting and give good opportunity for removing core sand. Such jackets offer a simpler construction than copper. Locating the fan pulley in the rear of the half-time gear cover on the forward end of the motor as illustrated in Fig. 1 has the advantage of not interfering with the removal of the aluminum plate forming the front of the engine gear case and further eliminates the boring of the cover for the fan shaft extension, which would give an opportunity for an oil leak at that point. A choice is given of four magnetos—two types of Bosch, Witherbee and U. & H., the last named a German product. The transmission has been changed by locating the gear shift lever outside of the frame at the right, motor devotees recalling how heretofore it was located in the floor board inside of the frame member, a location used to avoid perforating the side member of the frame to take the change speed lever shaft and the brake shaft. While the frame side member is now perforated it is strengthened by the presence of a semi-oval metal bracket—See A, Fig. 4—bolted to the outside of the frame and which carries and entirely encloses the change speed lever's lower end, as well as taking the sector B for the emergency brake lever. The bracket is a mud and dust-proof affair, entirely enclosed at its lower end, the only opening in it being the slot in which the change speed lever operates. An improvement in the three-

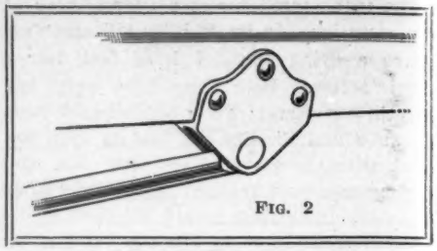


FIG. 2

speed selective gearset is the lengthening of the bosses on the transmission case for carrying the Timken roller bearings as well as using chrome nickel steel for the propeller and rear axle drive shafts where nickel and high carbon steels were previously in vogue.

The running gear has undergone several modifications, all taking the nature of enlargements. The side members of the frames have been increased in vertical depth ½ inch, the horizontal webs added to to the extent of ½ inch and a heavier stock employed; brake drums on the big car are made 14 inches in diameter where 11½ formerly sufficed, and the width has been raised to 2½ inches. The drums are steel stampings instead of malleable iron castings. Road wheels, while enlarged in diameter in the small car, have been increased in strength by the use of twelve and fourteen spokes in front and rear and increasing the spokes to 1 7/8 inch

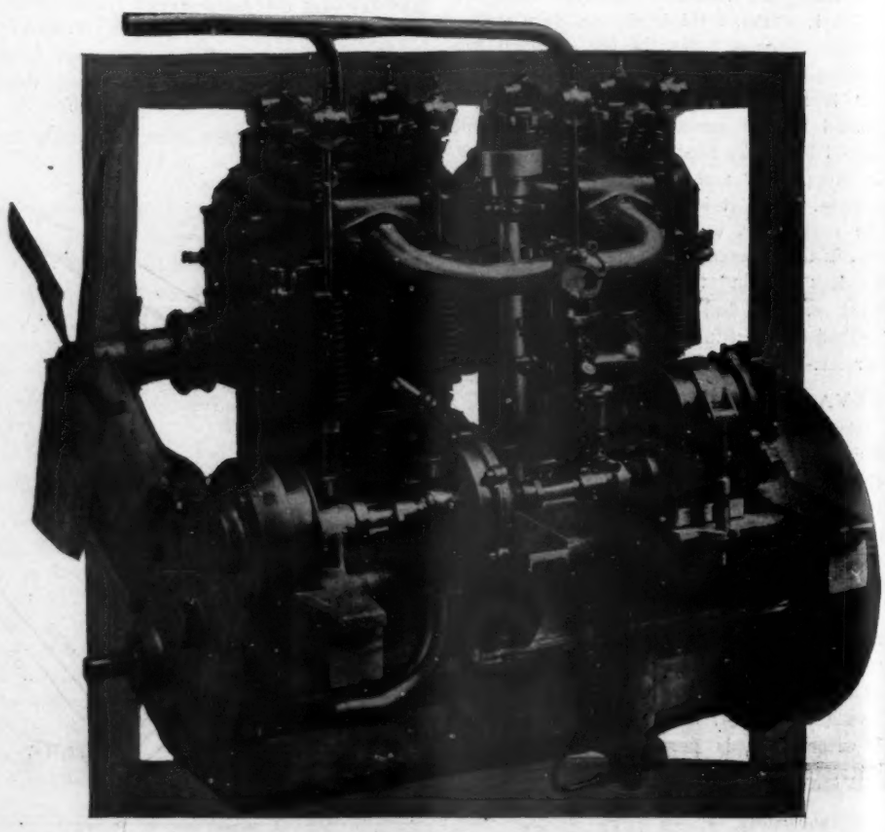
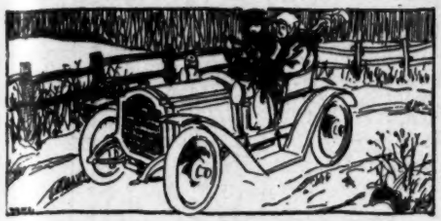


FIG. 3—MAGNETO AND PUMP SIDE OF STODDARD-DAYTON MOTOR

Three 1909 Stoddard-Daytons



in width in the big car. The side strut rods from the frame members to the rear axles casings are now made as illustrated in Fig. 2, with a bolt and eye connection at the frame instead of the ball and socket joint of previous seasons. The steering connections now pass over the front axle at the right front of the car—see Fig. 6—instead of under the axle, a change noted on the majority of the 1908 cars and which takes this most important member of the steering mechanism out of the reach of road obstructions. The tie rod between the steering knuckles is in front of the axle. In the body work a change is covering the wood construction with sheet metal instead of a special textile fabric, the apparent aim being that while textiles are subject to variations in climatic conditions in different countries, sheet metal is not, the result being a better enduring finish is possible. The straight body lines are practically as at present, except that the tonneau rear is a straight line from the base of the seat to the top, whereas it formerly had a slight reverse curve; there also is a simplification of the tonneau door lines and the tonneau side lines at the same place. The different models are all alike in the employment of the oval radiator filling cap—a distinguishing Stoddard-Dayton mark—and the straight wood dash, and throttle and spark controls on sectors under the steering wheel rim at the left where they may be controlled with the fingers of the left hand while the right hand is engaged in making changes of speed, are other marks by which the cars for 1909 may be recognized.

Before going into detail on several of the systems in vogue on Stoddard-Dayton cars, an enumeration of the models will serve as an introduction to some of these systems. The three types—9H, 9A and 9K—carry motors with the following sizes: 9H—Bore, 3⅞ inches; stroke, 4½ inches, and rated at 24-horsepower A. L. A. M. 9A—Bore, 4 inches; stroke, 5 inches, with a formula rating of 25.6. 9K—The same as at present; bore, 4¾ inches; stroke, 5 inches, giving 36.1 horsepower. The company gives a little higher horsepower rating than these 9H 25-horsepower, 9A 35 and 9K 45. The little H has undergone the most changes, now having the valve-in-the-head motor, a wheelbase of 103 inches instead of 92; 32 by 3½-inch tires where 30 by 3-inch sizes were used; chrome nickel transmission drive shaft and rear axle parts; larger brakes, a heavier frame and the motor stroke increased from 3¾ inches to 4½ inches. This little car has body lines identical with the bigger brothers and is made with a detachable tonneau as well as regular two or three-passenger roadster. The model 9A is a new style coming as a halfway step between the little 9H and the big model 9K. It is a five-passenger touring car with 105-inch wheelbase and 34 by 3½-inch tires. As a roadster it is known as 9C, having a wheelbase 110½ inches long in order to give a good suspension of the motor with relation to the front axle and introduce a rakish steering column. The big car model 9K is the present model G put through the metamorphosis process for 1909, as already delineated. Its wheelbase measures 120 inches and when fitted for seven passengers carries 34 by 4½-inch rear tires, and 4-inch sizes when fitted for five passengers. As a roadster this car is known as Model 9F and uses a 113½-inch wheelbase.

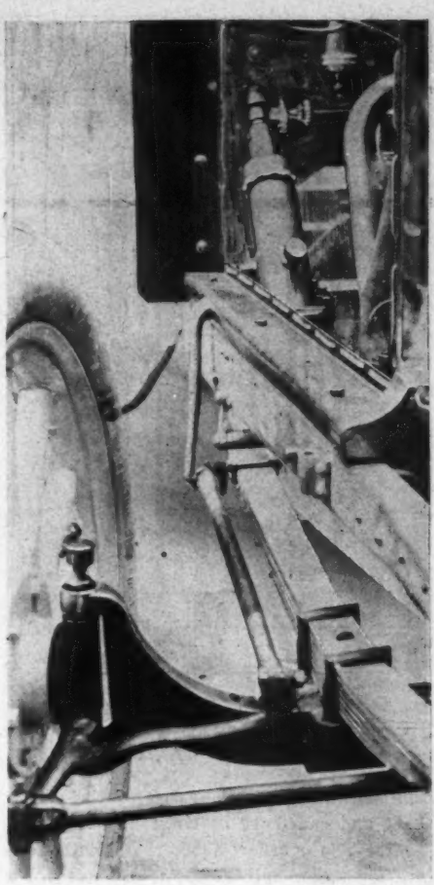


FIG. 6—STEERING RODS ABOVE AXLE

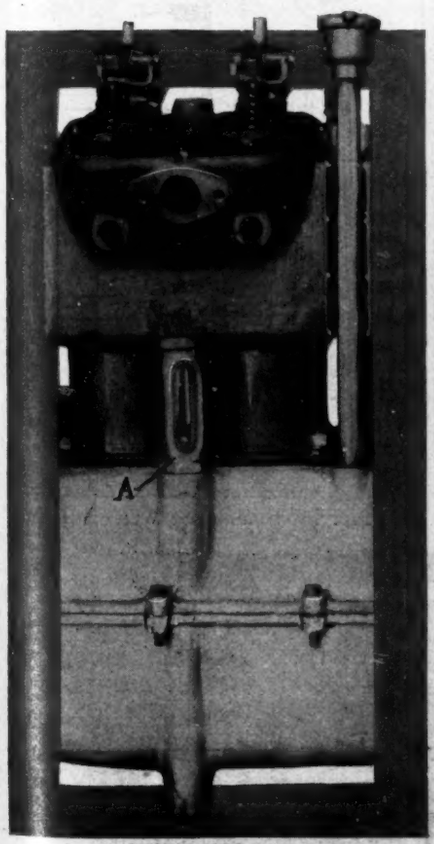


FIG. 5—OIL GAUGE ON CRANKCASE

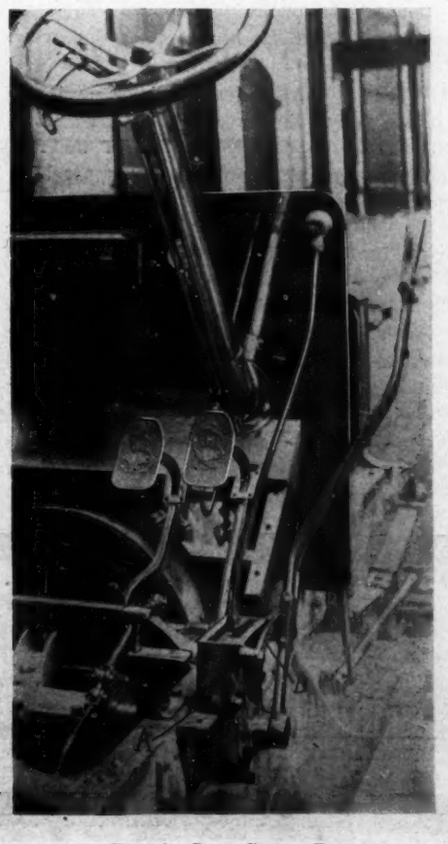


FIG. 4—GEAR SHIFT PARTS

No part of the motor offers greater interest than the oiling system, which in brief is a crankcase-contained system, in which the lower half of the crankcase is divided by a horizontal sheet metal partition, that part beneath it being an oil reservoir in which is a vertical plunger pump driven by eccentric off the camshaft and which pump delivers oil into a distributing manifold attached to the upper half of the crankcase. From this

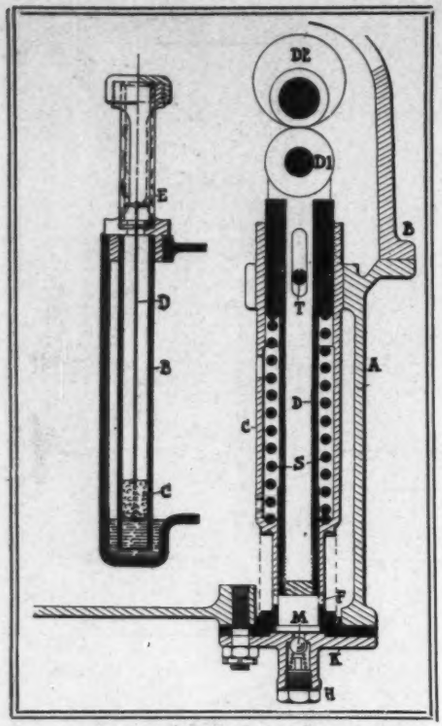


FIG. 7—OIL PUMP AND GAUGE

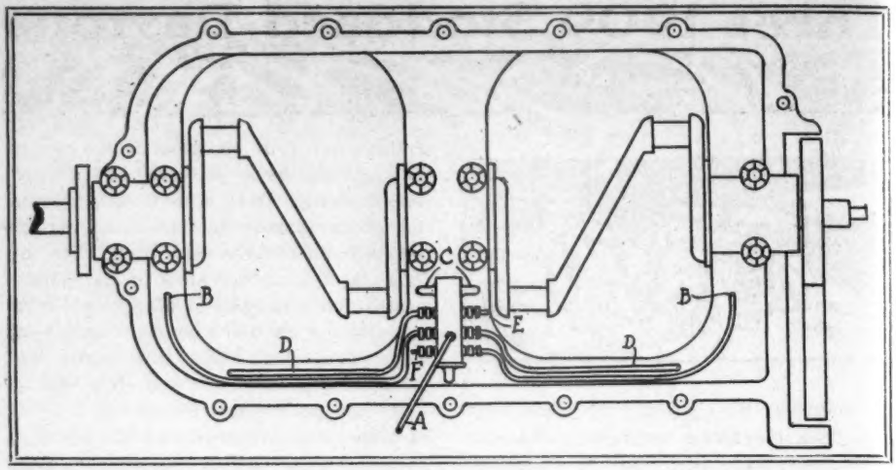


FIG. 8—DIAGRAM OF OIL LEADS IN CRANKCASE

manifold the oil is delivered to the crankshaft and camshaft bearings and the timer shaft. The overflow from these leads falls into the upper half of the crankcase and is refiltered into the oil reservoir. The system is therefore not a splash one but a positive transporting of oil to every motor bearing as well as to the cylinder walls. The diagrammatic representation—Fig. 8—of the distributing manifold shows the manifold supplied by the pipe A with oil leads B to the end bearings of the crankshaft, the two leads C to the center crankshaft bearing, the leads D to the end bearings of the camshaft, lead E to the timer shaft and F to a sight gauge on the dash. Fig. 11 shows how each crankshaft bearing is lubricated. The oil lead A pours its contents into a pocket B above the bearing. In the bottom is a hole conducting the oil direct to the bearing, but which outlet is not so great as the supply of the pipe A with the result that the pocket B overflows as indicated, the surplus dropping into a groove on the bushing and overflowing into a bronze ring C carried on the throw of the crankshaft. This ring has a peripheral groove especially designed for catching this overflow and has an elliptical extension carrying an outlet E through which the oil finds its way into the bored crankpin of the crankshaft, centrifugal force driving the oil through this course. The crankpin is bored with a radial outlet D to lubricate the lower bearing of the connecting rod. In this system the oil has to be conveyed to the upper connecting road bearing, which is done as shown in Fig. 10 by attaching a copper tube F to the side of the connecting rod by clamps M. This rod at its lower end has an opening G through the lower connecting rod bushing N and at its upper end a similar opening through the wristpin K. The oil once raised into the wristpin by force flows through it and as indicated by arrows X reaches the cylinder walls, which it lubricates. By means of an opening T in the top of the wristpin oil is by the reciprocation of the piston through this hole and, dropping, finds its way to the end bearings of the wristpin.

Thus is the lubricating liquid positively conducted to the three crankshaft bearings; thence to the lower bearings of the four connecting rods; thence to the upper bearings of the connecting rods, and thence to the cylinder walls. The camshaft is similarly cared for, the overflow from it soon finding its way back to the oil reservoir.

A few words as to the care in oiling the vertical commutator shaft at the side of the motor is necessary and which is illustrated in Fig. 13, a vertical section of the timer shaft and parts. The hardened shaft A carries on its lower end a bevel B and on its upper end the revolving contact. This shaft finds support in an aluminum casting D within which is a bushing E for the revolving shaft A. A separate oiler lead pours lubricant into the cup ring receptacle F on the base of the casting D in which are holes FI to conduct the oil to the revolving shaft A on which is a spiral groove which carries the oil upwards, distributing it through the entire ascent. The surplus at the top finds its way to the center of the mechanism, lubricating the plunger and other parts, and is conducted to the space H between the bushing and the aluminum casting in which

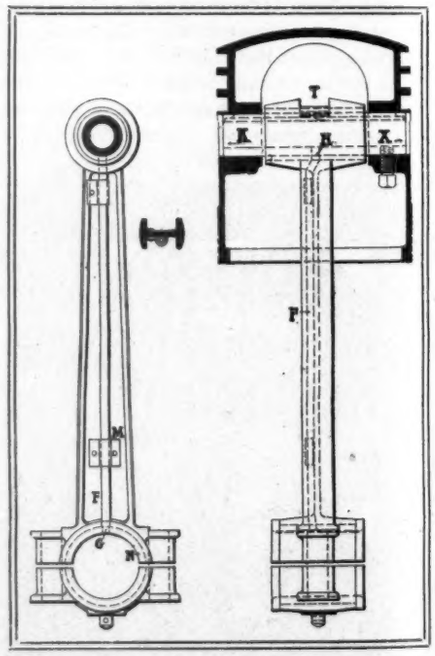


FIG. 10—OILING THE WRIST PINS

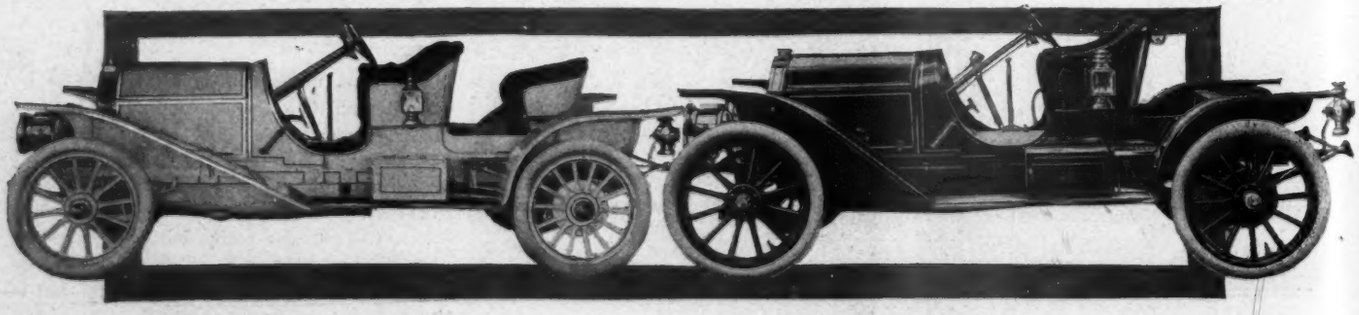


FIG. 9—MODELS 9K, 45-HORSEPOWER AND 9C, 35-HORSEPOWER

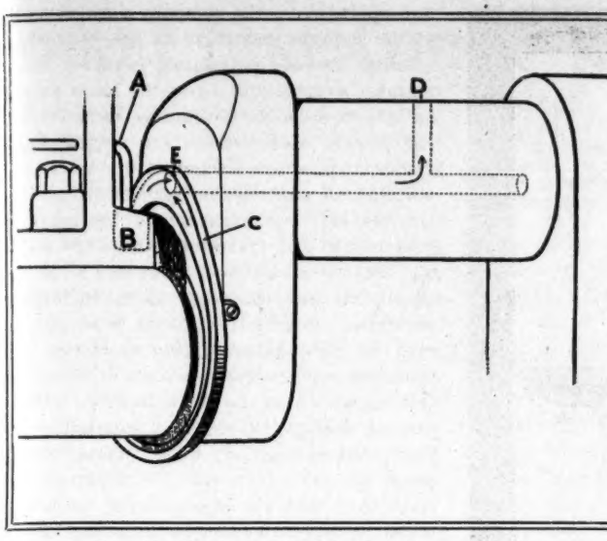


FIG. 11—STODDARD CRANKSHAFT LUBRICATION

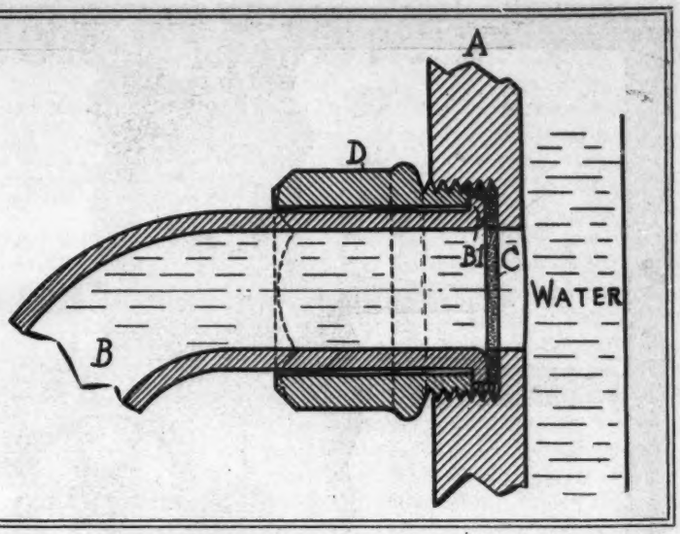


FIG. 12—ATTACHING STODDARD WATER PIPES

it falls to the base again, ready to overflow and lubricate the central camshaft bearing of the motor.

The plunger pump on which rests the burden of this complete circulation is carried in the lower half of the crankcase and is illustrated in Fig. 7. A marks the lower part of the crankcase, B the upper part and C the pump casing. The reciprocating plunger D carries a roller DI on its top, which contacts with the driving eccentric D2 on the camshaft. This eccentric forces the plunger down and the spring S lifts it. During the upward stroke oil enters the casing through a series of holes F immediately beneath the plunger when at the top of its stroke. On the down stroke it is forced out into the crankcase until the holes F are closed by the plunger, after which the oil is forced through the lead H to the distributing manifold already mentioned, its passage being by the check valve M, which prohibits its return. The pump can be dropped by removal of the casing K secured to the base of the crankcase by three bolts. The pump has a ⅞-inch diameter and ¾-inch stroke. The guide pin T prevents the turning of the plunger when in use, thereby keeping the roller DI in alignment with the eccentric D2. Locating the pump so calls for 9 inches of external tubing, the only oil pipes seen around the motor—except that to the dash gauge—this length connecting from the exit H of the pump to the upper part of the crankcase, where connection is made with the distributing manifold. Attention is drawn to the oil gauge A on the crankcase—Fig. 5—which tells the level in the oil reservoir. As diagrammatically represented by Fig. 7 it is a tube B extending into a pocket in the base of the crankcase, a cork C resting in the bottom of the tube and connecting by wire D with a flyer E in the aluminum top or gauge part. So delicate is the device that the addition of a pint of oil to the reservoir supply results in a lifting of the flyer. The oil is fed to the crankcase or oiler through a filler tube rising to the top of the cylinders at the right side. On the other parts of the car are compression grease cups in numbers. The valve rocker arms carry two each; the fan shaft has one; others are on the pump and magneto shafts; and a review of the chassis shows they are positioned on universal joints steering gear parts and spring bolts. The utmost care has been bestowed on seeing that every wearing part has commensurate lubricating means fitted to it.

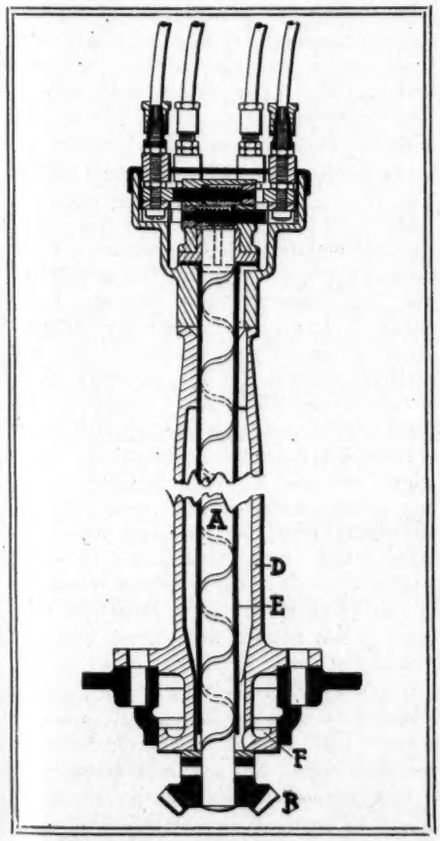


FIG. 13—OILING THE COMMUTATOR

The manufacture of the upper half of the crankcase has been facilitated by removing the elevations on which valve lifter rod guides rested in 1908 so now the part of the crankcase on which these rest is on a level with the part supporting the four cylinders so the milling of all these parts is done with one operation instead of two as formerly. This year four gears are needed in the front of the motor; the camshaft gear being a double one, the large-diameter part meshing with the crankshaft-pinion and the smaller-diameter part for driving the pump and magneto shaft. By a nicety of dimension it is possible now—see Fig. 14—to employ but three gears, the crankshaft pinion A driving the camshaft gear B and this in turn driving the magneto shaft gear C. The magneto and pump are carried

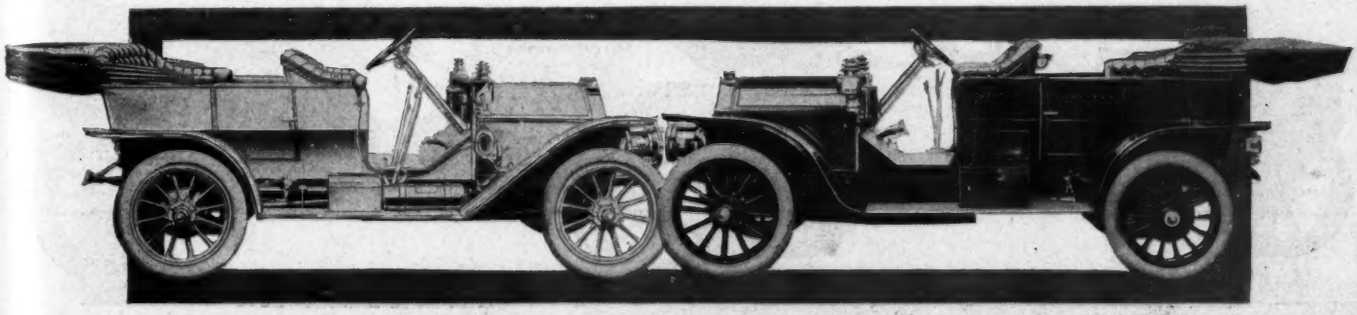


FIG. 15—STODDARD-DAYTON MODELS 9A 35-HORSEPOWER AND 9F 45-HORSEPOWER

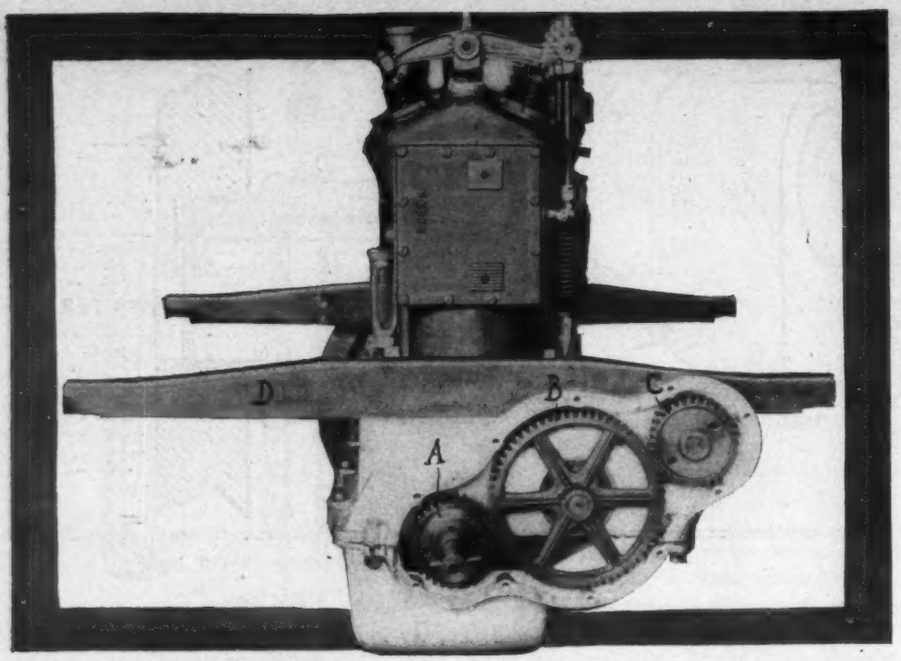


FIG. 14—STODDARD-DAYTON MOTOR SUPPORT

on integral brackets on the side of the crankcase; and in the little 9H model the aluminum supporting arms are replaced by cross channel members D, which bolt to the upper part of the crankcase over which they pass. These channel members make a support that is particularly rigid and one that has manufacturing advantages as well as consuming little of the valuable space surrounding the motor. By the employment of clutches in the pump and magneto shafts each can be taken off without molesting the other. The pump bracket bolts direct to its bracket and the magneto attaches by the overhead strap with swinging bolt, the bolt hinging to the strap and taking a wing nut on its lower end. In the supporting bracket is a slot for receiving the bolt with wing nut, which with a slackening of the nut can be swung out of the slot. The cooling fan is supported from the crankcase through a two-part bracket, each part with a serrated surface for bearing against the serrations in the other with binding nuts holding them together. Loosening the nuts allows of rising or lowering the part of the bracket carrying the serrations, maintaining any desired height. Schebler carbureters are stock equipment, the Stoddard-made tubular radiators are continued and the double ignition system of magneto and battery with double set of spark plugs has not been altered. In attaching the water pipes B—Fig. 12—a fibre gasket C rests against a shoulder on the cylinder casting A. On the end of the pipe B is a flange B1, bearing upon the gasket, and a ring nut D holds all together.

In the transmission department the conventionalities of the present remain. The propeller shaft carries a double universal joint where it unites with the gearset, and behind this is encased in a torsion tube which anchors to the differential at rear and has a ball-and-socket sliding support to a cross member of the frame at its front end. Supporting this tube in taking the driving strain from the back axle to the frame are the side strut rods. In these cars the rear semi-elliptic springs are shackled at both ends, and mounted on seatings rigid with the axle housing. The axle is of the floating type carried on Timken bearings with the differential housing made with cover plate large enough to remove the differential intact. The frame members are arched over the back axle—a practice followed for three seasons—and the forward axle is a weldless I-beam member.

Stoddard-Dayton cars are essentially home-made products. A foundry owned and operated by the company furnishes all of the cylinder castings, all the aluminum castings for the crankcase, gearbox, commutator support and all of the brass parts. In the steel building the side members of the pressed steel frames are forged, burnished and mounted together; in the same building all parts of the springs are made; side by side with the forges for making gear blanks and frames are those for making the one-piece front axles, the steering gear parts and the score of other forged parts that enter into the sum total of the car. In a separate building are made the radiators used on all models. All gear cutting is done in the machine shop; bodies are all made in a separate compartment. This delineation of home manufacture could be continued, but it is sufficient to state that with the exception of the electrical parts, carbureter, wheels and Timken bearings used, the car is a product of the Stoddard-Dayton factory.

MOTOR CAR LITERATURE

"The Oakland in the 1908 Glidden Tour" is a short, well-illustrated story telling about the performance of the two Oakland touring cars in this contest. The story draws attention to the fact that both cars were of the two-cylinder vertical type driven by inexperienced drivers, and narrates the different days' work, the roads encountered and experiences of the trip.

In its bureau of tours 1908 year book the Automobile Club of America gives a great many touring routes throughout the east; the ports of entry and motor car duties to foreign countries; the different kinds of motor car insurance, and the registration laws for the different states of the Union. The route directions are greatly abbreviated by the use of a series of characters representing directions. Right angles are used for right and left turns; and other characters for forks, curves, crossroads, railroads, telegraph wires and many other road conditions. A little study of the key page of these characters at the front of the book would be sufficient to familiarize the tourist with the meaning of them.

The Year Book for 1908 of the Imperial Automobile Club of Germany is provided with a vast amount of touring information and maps. For parties contemplating a tour throughout the German empire it would be particularly valuable.

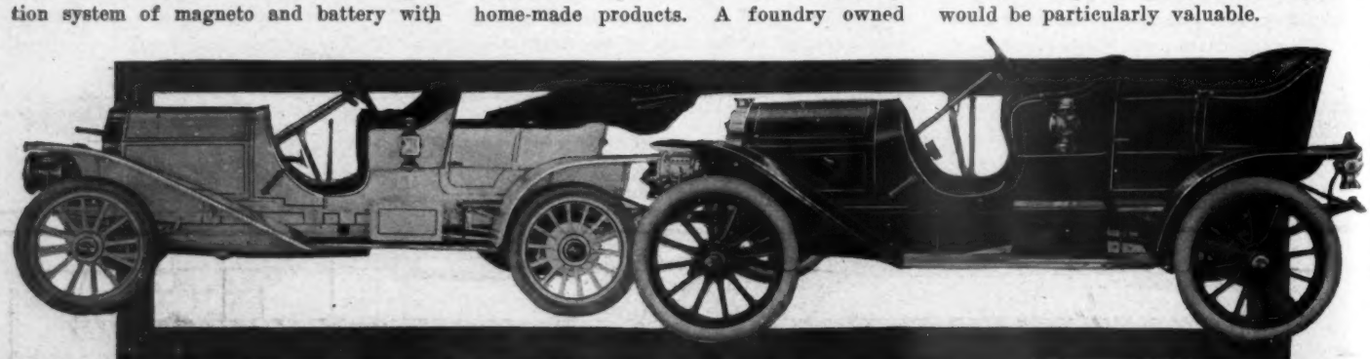


FIG. 16—STODDARD-DAYTON MODELS 45-HORSEPOWER AND 25-HORSEPOWER

DIRECT READING MOTOR CAR POWERMETER

AN apparatus which will be of interest to motor car manufacturers, garages and sales rooms, clubs, etc., has recently been developed and patented by the Central Laboratory Supply Co., LaFayette, Ind. The machine is unique in that it is simple, easy to operate, and the fact that it indicates by means of a pointer on a scale the horsepower developed by the car at any and all speeds and the speed in miles per hour. It will serve manufacturers as a convenient method of testing the driving power of a finished machine, the test being easily and quickly made, without making any adjustments or changes in the car to get it ready for testing.

Referring to the illustrations, it will be noted that two wheels, A, spaced equal to the tread of the car, project slightly above the floor line of the testing room. The car to be tested is placed so that its rear wheels rest on these two wheels. The front wheels are blocked and the machine securely locked to a post in the rear. The wheels A mounted on a shaft B run on roller bearings at D, and when the car is started it itself cannot move, but it drives the wheels. To place a load on the engine an absorption brake F is connected to the end of the shaft. The power required to drive the brake is changed or adjusted by means of a hand wheel, which is within reach of the operator through a rod. The ingenious part of the apparatus is the device which indicates the power. It is comparatively easy to make a power indicator which will show the power correctly at one speed, but to produce a device which will indicate the

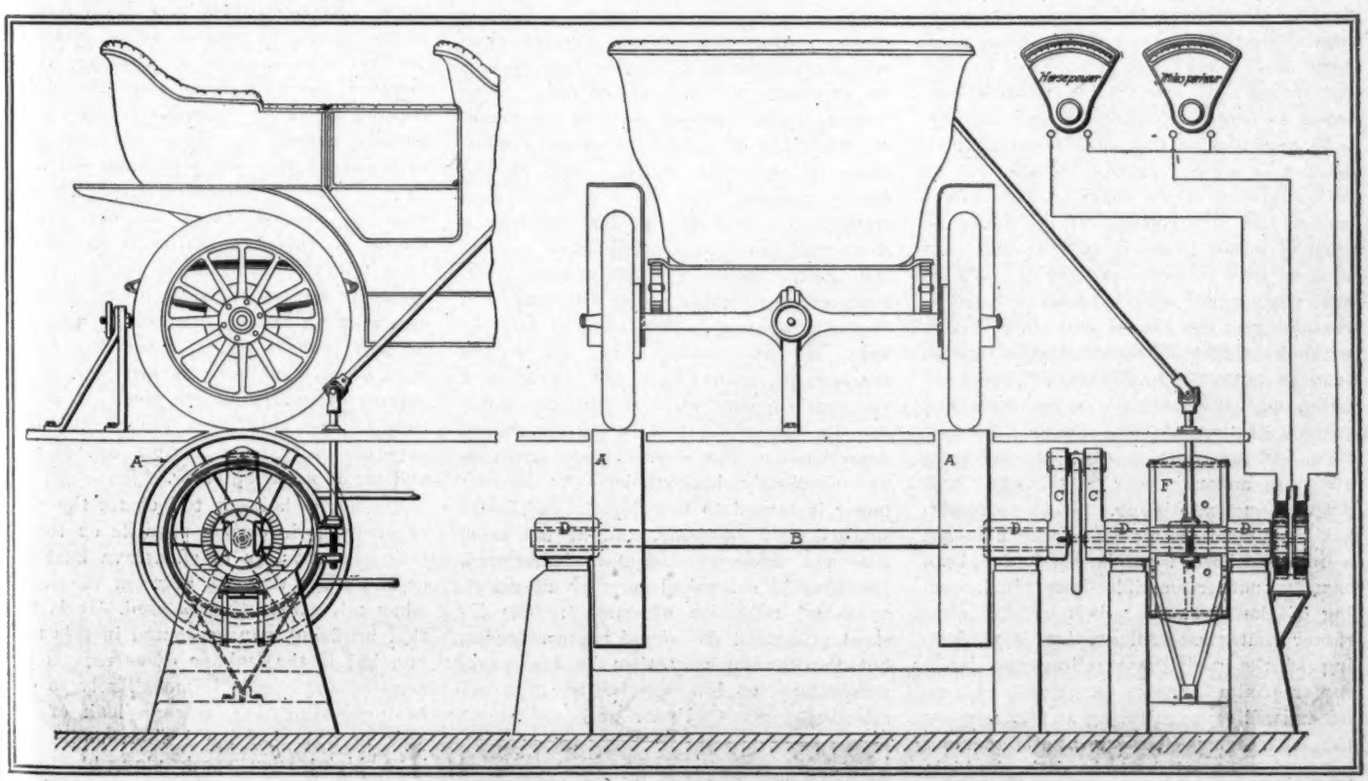
EDITOR'S NOTE—Professor J. Walter Esterline, of Purdue University, La Fayette, Ind., describes a machine invented by Professor C. R. Moore of Purdue and J. Harris of the Central Laboratory Supply Co., for indicating the horsepower and speed of motor cars.

horsepower delivered by the engine at any speed is not so simple a matter. The powermeter is connected between the shaft B and the spindle of the brake. It consists of two disks C, one fastened to the shaft B, the other to the shaft of the brake. These disks are connected by a spring. All of the power developed by the machine is transmitted by the rear wheels to the wheels A, by them to the shaft B, then through this spring to the brake. The spring is of special design, made so that twice the sine of half the angle of deflection is proportional to the torque or twist deflecting the spring. Now when the brake is applied the spring is deflected by the power developed and transmitted through the spring.

Connected to each of the disks of the powermeter is a small revolving field alternating current generator. The generators are exactly similar and produce sine waves of voltage and at the same potential. It is well known that when two alternating currents of the same voltage and wave form are displaced then a current will flow proportional to twice the sine of one-half the angle of displacement. The alternators are connected opposing each other and placed so that they exactly oppose each other when there is no power being transmitted when there is no deflection of the spring.

A voltmeter is placed in the circuit between the two small generators, and since no current flows when the spring is not deflected, it shows no reading, or zero power. When power is transmitted by the spring it is deflected, and the two alternators thrown out of step by an amount equal to the deflection of the spring. The torque is proportional to twice the sine of half the angle of deflection of the spring. Also the current through the voltmeter is proportional to twice the sine of half the angle of displacement of the two alternating currents, which is also the deflection of the spring, so that the current through the voltmeter at a given speed is directly proportional to the torque or twisting effort.

Here is where the advantage of using electrical means of indicating comes in. The horsepower transmitted is proportional to the torque multiplied by the speed. Likewise the voltage of the little generators also changes with the speed as well as the deflection of the spring, so that increasing either the speed or the twist will increase the reading correspondingly. Therefore, the voltmeter gives a reading proportional to the product of the speed and the torque, namely, it reads the horsepower transmitted. This is the only instrument of the kind which has been devised to read horsepower directly on the scale of an instrument without any mathematical calculations whatever. Further, since the voltage of either one of the alternators alone is proportional to the speed, by connecting one directly to a volunteer the miles per hour or revolutions per minute can be read directly on the instrument.



END AND SIDE ELEVATION OF THE POWERMETER FOR TESTING MOTOR CARS

Motor Car Shop Kinks

Magneto Ignition Misfiring

AN engine having magneto ignition may suffer from any of the general causes of misfiring that affect engines with battery ignition, such as loose connections, broken wires, sooted spark plugs, cracked porcelains, etc., and these, being the commonest of the possible causes of misfiring as well as the easiest to investigate, are naturally the first to claim attention. Since they do not belong peculiarly to the magneto they need not be considered in detail here. There are, however, many causes of trouble peculiar to the magneto itself, and these occur less easily to the mind of the non-electrical shop man, who is apt to regard the magneto as a box of tricks best left unopened.

A few causes of troubles are common to both the low and high-tension types. One of these is a broken field magnet. Naturally this is not a common trouble, but breakage of one or two magnets where they are screwed to the pole pieces may cause erratic changes in the magnetic field, due to vibration of the loose magnets, and consequently difficulty in starting and missing at low speeds. Another possible cause, which, however, is mostly confined to magnets with plain bearings, is contact of the armature with the pole pieces due to wear in the bearings. The effect of this will be to scrape the insulation from the outer layer of wire and ground the current when the wire touches the pole pieces. The missing may come and go irregularly, owing to the armature floating slightly up and down in its bearings under the influence of the strong magnetic field. When the outer wires become cut through—if the trouble remains neglected so long—the spark will fail entirely.

In high-tension magnetos misfiring may be due to several possible causes, one of which is wear of the roller on the contact arm of the interrupter. If the roller be steel it is not likely to give trouble, but if it be fibre it may wear flat in spots, so that when a flat spot happens to come in contact with the cam it will slide over it without contact, or with too short a contact to permit the armature current to build up. Obviously the same cause will account for irregular changes in the spark time. If the roller is steel and the cams are fibre unequal wear of the cams will produce unequal timing. The best combination is steel cams with a fibre pin—not a roller—whose wear is equal for both cams. Another possible cause is loosening of the platinum points of the interrupter contacts. Still another is weakening of the spring controlling the interrupter contact finger. A punctured condenser will cause misfiring at high speeds: the symptom is flashing at the contact points. A partial short circuit in the high-tension coil of the armature may cause misfiring at high speeds, unaccompanied in this case by visible electrical display. Looseness of the interrupter contact finger on its pivot due to wear is a possible cause of irregular timing, especially if the spring be weak. Loose armature bearings will also modify the instant at which the interrupter makes and breaks contact, and may produce missing owing to the contact being too brief for the current to build up.

A still further cause of possible misfiring is poor contact by a carbon brush when forming a part of the low-tension circuit. In magnetos having this feature—most do not— the spring pressure of the brush must be fairly strong to insure good contact. Misfiring may be due to carbon particles or dirt bridging the space between the contact segments in the distrbuter. All the insulated surfaces in the distributer should be kept clean, and the path traveled by the carbon brush lubricated with the slightest trace of oil.

In the low-tension magneto system the interrupter mechanism is virtually transferred to the cylinders themselves, and the magneto is extremely simple. Unless the armature has worn down in its bearings there is not much likelihood of trouble here. The igniters, however, contain several possibilities of trouble. If the contact points are steel, misfiring may result from looseness of the rocking stems belonging to the contact fingers. Usually these rocking stems carry outside arms which are actuated by buttons and springs on vertically moving igniter rods. The buttons on the ends of the rods are rounded beneath and engage cup-shaped depressions in the ends of the arms on the igniter rocking stems. If these rocking stems are a true fit in their bearings a clean and sharp break will occur even if the igniter rods are slightly bent. If, however, the rocking stems are loose, and if the igniter rods are ever so slightly bent, the first action when the button touches the igniter arm will be to rock the stem sidewise while the button settles into its central position in the cup-shaped depression in the arm. Thus contact is not absolutely broken, but the contact finger is caused to rub slightly on the insulated steel electrode, and at the same time the pressure of contact is reduced, resulting in a marked increase of resistance and reduction of current. The instant afterward the actual rupture occurs, but the current may then be too weak, particularly at low speeds, to give an effective spark. Under such conditions the engine may misfire irregularly in one or more cylinders when throttled, and gradually fire more steadily as the speed increases and the current becomes strong enough to make a spark under adverse conditions. Misfiring due to these causes will evidently fluctuate according to the condition of the contact points, and an engine may begin by misfiring badly and gradually improve as the surfaces in contact are broadened by slight burning away of the points. The best remedy is to put in platinum points, whose conductivity does not so easily fluctuate. A simple test for the condition just described is to put the igniter in circuit with a battery and voltmeter while the crank is turned by hand. The voltmeter will show a marked drop just before the final break.

Another possible cause of misfiring is slackness of the springs which press the igniter points into contact. Still another is crookedness of the igniter rods, when this has the effect of breaking contact irregularly sooner or later according to where the button on the rod takes hold of the igniter arm. Still another cause is found in wear of the rollers on the igniter cams. If any roller be worn flat in spots it will lift the igniter rod more or less, according to position, and at times may give it too short a lift for contact or for sufficient dwell to permit current to build up. Where the ignition time is varied by shifting a spiral cam the igniter rollers have very thin edges which easily become worn. Obviously this may cause change in the timing as well as actual misfiring. Another possible cause of misfiring, which, however, can only occur when the igniter rocking stems are excessively loose, is air leakage around the stems. If the stems have an end play—as is probable—in addition to radical looseness, fresh air may suck in around them on the suction stroke, so that the igniter is surrounded by a mixture too dilute to ignite. If the cylinders receive sufficient oil to cause an escape of oil around the rocking stem this oil may prevent air from entering, but it may cause trouble of its own due to imperfect grounding of the stem. A simple way to test this is to ground the stem experimentally by a flexible coil of wire and see if misfiring stops.

The novice is likely to look for the cause of misfiring in carbon deposits on the inside insulation, in cracked lava bushings, or in carbon deposits between the leaves when mica insulation is used. It is true that misfiring may be caused in this manner, but if the leakage of current is pronounced the engine is more likely to quit business altogether, since a leak of this kind in a low-tension igniter, unlike that in a high-tension spark plug, bleeds the sparking current in all the cylinders alike.

Legal Lights and Side Lights

CLEVELAND ON WARPATH

Visiting motorists in Ohio must beware of Cleveland, for that city is reported to be developing into one of the worst in the middle west for speeders. A few days ago Chief of Police Kohler started a campaign against motor car owners, classing them with those against whom he is conducting a war. The "other undesirables" consist of yeggmen, pickpockets, burglars, coal stealers, tramps, etc., etc. The war is now on in earnest. At every corner where there is the slightest possibility for the motorist to speed is stationed a patrolman with a stop watch, and another a little farther on. The only loophole lies in the fact that the men are new at the work and are easily located. In addition to this, the chief has ordered all the former members of the bicycle squad, who were relieved of this duty some time ago, to mount their wheels again, and twenty-six additional members have also been added to this squad, these covering every precinct in the city.

GOPHERS SUGGEST NEW LAW

The Minneapolis Automobile Club is behind a movement which promises to arouse general interest in the northwestern states this winter. The motorists will go before the Minnesota legislature with a request that motor cars be exempted entirely from the present personal property taxation and that in lieu of all taxes a state registration fee, graduated from $5 to $75, be levied for the benefit of the county and state road funds. This radical change in Minnesota road, taxation and motor laws is certain to find both opposition and support. The present system of motor registration in Minnesota is universally condemned. At present each city issues local licenses, the numbers beginning with 1 in each municipality. The authorities find it impossible to keep track of cars, or to compel all owners to take out licenses. Minnesota formerly had a state licensing law, but this was changed by the last legislature. It is almost certain that a change back to state registration will be made this winter. The secretary of state, in his report this week, urges the legislature to provide for a state registration law, and the majority of the motorists favor it. The proposition of the Minneapolis club, however, is not so readily adopted. In many quarters it is believed it would benefit the various communities much more than the collection of the personal property tax on motor cars now benefits them. The various communities will undoubtedly fight against giving up their personal property levy upon the machines, however. In Minneapolis between 1,700 and 1,800 cars are assessed, and the total of taxable valuation is high. The motorists favor a graduated state tax, based on horsepower, weight and other features, the licenses to be issued by the secretary of state, consecutively numbered, and entitling the owner to use his car in any portion of the state. The money so collected would go into a good roads fund to be used in the counties where the respective machines are registered.

In his report to the legislature, just made public, Secretary of State Julius A. Schmahl says in part: "In view of the repeated requests from residents of Minnesota, as well as from other states, for licenses to operate motor cars in Minnesota, I cannot too strongly recommend to your honorable body the enactment of a uniform law governing the licensing of cars in Minnesota. The license, in my opinion, should be issued by this department and a uniform fee of $1.50 or $2 per annum could be charged without injury to the owner, and with great benefit to the state. At the present time there is absolutely no uniformity in the numbering of machines; each municipality or township organization has its own system of numbering, and as a result a large number of machines operated in Minnesota have precisely the same number, which must necessarily work more or less inconvenience to police and other officers of the law seeking to ascertain the ownership of certain machines. The issuance of licenses by the state and the annual publication of the list of owners would be of great benefit to peace officers as well as to the owners and to the public generally. The same number could be retained by the same owner year to year, and the owner would undoubtedly be highly pleased to pay a small annual license in order to maintain this identity. This department is daily in receipt of requests from residents of the state, as well as foreign residents, for these licenses, and the provisions for a state license should be made at as early a date as possible by your honorable body. There are probably in the neighborhood of 10,000 motor cars in this state, and an annual license of $1.50 for the operation of each machine would bring a fair return into the state treasury, I feel confident.".

AFTER NEW LAWS

On Friday, at the clubhouse of the Automobile Club of Germantown, there will be held a meeting of the executive committee of the Pennsylvania Motor Federation and the presidents of the various affiliated clubs to discuss and draft new motor vehicle and road laws, to be presented at the next meeting of the state legislature.

WOULD EXAMINE ALL DRIVERS

The grand jury in its final report to the judge of the criminal court in Baltimore recommends that all persons driving motor cars, whether owners or chauffeurs, should be compelled to take an examination and to secure a license showing that they are qualified to manipulate the machinery of the motor in a thoroughly safe manner. This action was taken in consequence of a number of accidents and reckless driving recently in and near Baltimore. The jurymen believe that if their recommendation is put into effect the number of accidents and tragedies would be lessened. President James S. Reese, of the Automobile Club of Maryland, favors the movement. He said that the club at its next meeting would take action to help along the movement. The club is at present preparing a bill which provides that owners and drivers shall pass a rigid examination as to their fitness to operate motor cars before a competent jury.

MAINE'S RECEIPTS

The highway commissioner of the state of Maine has just compiled the figures showing how much money Maine has secured from motorists since the law of registering cars went into effect, June 1, 1905. The total to September 1 of this year reached $14,686. This was divided as follows: Registration of motor cars, $6,108; licenses issued to operators, $7,126; dealers' licenses, $790; registration of motor cycles, $662. There has been a gradual increase in the number of motor cars in the state each year. It goes along rather evenly during the summer and keeps up a fair average during the other months. The roads in some part of the state are not favorable to all-year-round motoring, which handicaps the dealers from selling a great many more. Yet, all things considered, this section of New England shows it is fully alive to the possibilities of the motor vehicle.

HOLDS OWNER RESPONSIBLE

While the chauffeur of Dr. Leonard, of Lillebonne, France, was driving his employer's car some months ago, he collided with a beer wagon and one of the wagon's frame projections hit a passenger who sat beside the chauffeur. The passenger died from the injuries and the chauffeur was arrested and convicted, being sentenced to 15 days in jail. The widow then sued the chauffeur and his employer for damages and in a recent decision of the court Dr. Leonard was held responsible for his chauffeur and ordered to pay the widow $600 and further to provide $60 annually for each of the three children until they had reached their majority. This decision has caused considerable comment.

From the Four Winds

N S E W

Breaks Denver-Cheyenne Record—E. W. Swanbrough, driving a Corbin roadster, made a record-breaking run from Denver to Cheyenne. He left Denver at 6:15 and reached Cheyenne at 10 o'clock. This distance is 118 miles. The roads were muddy in places.

Big Mileage Average—Harry W. Byron, of Mercersburg, Pa., has just completed a trip to Portland, Me., in his six-cylinder Franklin. The trip was remarkable for the number of miles traveled—1,960 in the 12 days, with an average of 10 hours a day, and is thought to be the highest average of any tour this season. Byron declares that of all the state roads Pennsylvania has the best. He attributes this to the fact that the roads are not so wide as others but made higher in the center and rolled wet. He speaks very highly of these roads, especially those in the northeastern part of Pennsylvania.

On the Job—The Connecticut Automobile Association is wide awake as to the practical needs of the motoring fraternity. Temporary signs will be erected immediately throughout the state wherever road improvements are being carried on. These signs will contain full road directions. Speaking of signs, that above the South Glastonbury postoffice meets all demands. The back ground is black and the letters are gold. The sign reads: "U. S. Post Office, South Glastonbury, town of Glastonbury, Hartford County, Conn., population 4,800, Hartford 9 miles, Middletown 9 miles." There one has the whole story briefly told with directions indicated. Vice-president Gillette, of the Automobile Club of Hartford, once endeavored to have the government erect signs of this nature over its post offices throughout the country; but the contention at that time appears to have been that the federal government would not be benefited and the matter was allowed to drop.

Carrier Uses Motor Buggy—James Atkinson, a rural mail carrier of East Troy, Wis., has joined the procession and now delivers mail to his patrons from a motor buggy. He is able to make three trips daily, while with horse and buggy he made but two. Mr. Atkinson says that the saving is no small item.

Detroit Dates—Plans are well under way for the first annual contest-tour of the Michigan Automobile Association, which will be run over the Grand Rapids-Detroit and return course, September 24-26, it being a 3-day run. The course is being accurately mapped out by President George, of the state association, and S. D. Walden, and four trophies have already been donated. The event will be governed by the same conditions which prevailed in the Glidden tour this year.

Buckeyes After Roads—The commissioners of Lucas county, O., are making preparations for extensive road repairs and improvements, which will cost many thousands of dollars before completed. To create a suitable fund for carrying on the work, much of which will be completed this fall, the board this week sold bonds amounting to $142,000. Of this sum $82,000 will be credited to the bridge fund, while the remaining $60,000 will be credited to the road fund proper. All the bonds bear 4½ per cent interest, and were sold to Otis & Hough, of Cleveland, and Seasongood & Mayer, of Cincinnati, joint bidders. The bridge bonds brought a premium of $3,837.60 and the road bonds $3,697. This is said to be the beginning of a systematic campaign of road building which will make the highways of Lucas county second to none in northwestern part of Ohio.

Cleveland Changes Dates—Because of the conflict with the dates of the Chicago contest, the Cleveland endurance run will not be held until October 14-16. This will also give more time in which to frame rules, secure entries, etc. This is the present plan of the club officers, but there is a possibility that the run may not be held until early in November.

Will Charge Toll—Fond du Lac, Wis., motorists and others who make the trip of 110 miles around Lake Winnebago will have to pay toll hereafter. Michael Steber, proprietor of the toll gate on the Lake Shore drive, has been charging horse-drawn vehicles only, but is going after the motorists. "Motor car owners are all wealthy people," he said, "and they must support the toll road, as they use it five times as much as other classes."

Registrar Means Business—Motorists in eastern Ohio are finding that the registrar, Fred G. Galey, of the state department, means business in enforcing the law to tag all motor cars. In the first 2 months after the law was passed 8,260 cars were registered by their owners. As this was only about ⅓ of the cars in Ohio he immediately started out to impress motor car owners with the necessity of complying with the law and much trouble has resulted from this.

Hartford Picks a Hill—The contest committee of the Automobile Club of Hartford devoted nearly a day scouring Hartford county for a good hill for the forthcoming climb. Two weeks ago it was decided to climb Avon mountain, one of the hardest grades in this state, up the side of a mountain in fact. At a meeting of the board of governors early in the week the matter of the climb was thoroughly thrashed out and it was deemed wise to conduct a further search for a real hill. But after careful consideration it was decided that the Avon route will be the scene

Brush at Minneapolis—Fred C. Nash and D. F. McCoy, of Detroit, reached Minneapolis August 31 in the Brush runabout which left Detroit in the efficiency test participated in by several cars. The runabout reached Minneapolis in good condition, after having covered 1,744 miles with the two passengers. The route lay through Indianapolis, Springfield, Peoria, Chicago, Milwaukee, Oshkosh and other cities, making a roundabout way of reaching Minneapolis, and increasing the hardship of the test. The runabout did not attempt to make time or establish records.

MITCHELL AGENTS IN ATTENDANCE AT ANNUAL MEETING AT RACINE

of the forthcoming event. The last turn will be banked to preclude the possibility of skidding. On account of the proximity of the proposed date to other notable events, that is October 17, it was deemed expedient to hold the event November 7, and unless the committee decides otherwise at a later date the first Saturday in November will be the occasion.

Speed Trap Announced—The police of Anderson, Ind., announce that they will soon arrange a motor car trap and drivers are awaiting developments with considerable interest. Just what devices will be employed is not known, the police having used stop watches in the past. It is stated that the speed laws will be strictly enforced in Anderson in the future.

Hartford Satisfied—There is an old saying that figures no not lie. That is particularly true of the selling situation in Hartford this season. The town has a population of about 100,000, and there are owned here about 700 motor cars. From statements given out by the local dealers 300 motor cars have been sold this season while the pessimists were shouting depression. Two or three of the dealers state that the present season has been the best ever and every indication points to a repetition in the coming year.

Politicians Like Motoring—The motor car has figured in political campaigns never more strongly than in the ante-primary campaign just closed in Wisconsin. James A. Wright, millionaire lumberman of Merrill, Wis., candidate for renomination as state senator, campaigned in his 90-horsepower Austin roadster, covering seven northerly counties, comprising his district. This country is nearly all wild and woolly. Oftentimes the candidate headed into miles of woods to find a lonesome town. The children were given a ride, the elders were shown about in the machine, and Mr. Wright spoke from the seat. Farmers in that part of Wisconsin, says Mr. Wright, show much favor to motor cars, more than farmers in southern Wisconsin, which is supposed to be more "civilized."

Motor Romance—The inordinate yearning to become the owner of a motor car has proved the undoing of Oliver Miller, an 18-year-old lad of Dayton, O. So intense became the desire of the boy that in order to satisfy his longing he agreed to marry Miss Dora Ormiston, a 44-year-old girl, upon condition that she buy him the coveted machine. Miss Ormiston, who was the keeper of a boarding house at Dayton, sold her property in order to buy the car, and the couple eloped to Lima, where the fair bride-to-be claims her juvenile lover deserted her, taking with him the motor car. Upon his failure to return Miss Ormiston related her tale of woe to the officials. Detective George Reed succeeded in locating Miller at a Toledo garage, where he had gone for repairs to the car, and landed him behind the bars at the Lima police station, and also secured possession of the machine. Miller claims the woman gave him the car and will fight the case. He was an elevator boy in Dayton when the woman became infatuated with him.

CADILLAC AIDS IN SHEARING SHEEP IN NEW ZEALAND

Motorphobia in Wisconsin—Racine and Kenosha counties, Wis., although practically the only motor car manufacturing district in the state, and homes of the Mitchell, Pierce-Racine, Rambler, etc., is the hot-bed of fanatics whose main aim in life seems to be the destruction of cars. Threats of repetitions of the famous Glencoe affair are made in letters from farmers to the daily papers. In Kenosha county tourists have brought to the sheriff's office most ingenuously contrived obstructions. The worst are planks studded with bolts and spikes.

Aid to Spellbinders—The motor car is a campaign necessity in Minnesota this year, as campaign funds are too low to pay for special trains or unusual railroad fares. In the cities, also, machines are being used by at least two-thirds of the candidates, in order to "cover" all of the numerous night meetings which result under the Minnesota primary system. In the state campaign, Governor Johnson and J. F. Jacobson, the rival gubernatorial candidates, are preparing to cover a considerable part of the settled sections of the state in motor cars.

Another Badger Tour—The touring bug has firmly imbedded itself in the minds of members of the Milwaukee Athletic Club, and two tours under the auspices of the club touring board have led to weekly tours in parties of five to ten cars. On September 5 a party of five, including Secretary James T. Drought, made a tour to Fond du Lac, Wis.; thence to Green Bay, returning Monday; another party went to Fond du Lac and thence to Madison and Beloit; a third party went to Chicago and Aurora, Ill., and a fourth party headed for Chicago and Elgin, Ill., via Lake Geneva, Wis. The participants say that while there are many advantages of touring in a body individual tours have some equal or better advantages, also. At least they find it so.

Big Parade for Pittsburg—The Automobile Association of Pittsburg will have a monster float in the sesqui-centennial parade the last week in September. Individual companies are going to spare no trouble or expense to make this one of the most beautiful exhibits in the entire parade, and committees will be appointed this week to get the affair in proper shape.

Baltimore on the Rampage—As a result of the agitation started by the Automobile Club of Maryland and the grand jury to discourage speeding in the city and counties, motorists have been arrested by the wholesale by the motor cycle cops. These arrests mainly have been on the smoothly paved thoroughfares within the city limits, in the parks and on the principal highways of Baltimore county. The motorists caught in the net have had to pay fines from $10 to $25 and costs for their fast driving. Among the victims of the crusade were several well known local dealers.

Hartford Streets Unsatisfactory—Members of the Automobile Club of Hartford are indignant over the condition of some of the local streets. That is to say, a local factory makes use of strip steel for the manufacture of its product. The waste material is carted away in horse-drawn teams and the loads heaped as high as possible. Now then, the jolts and jars scatter the contents of the teams about the highway and endanger tires, and horses' hoofs, too, for that matter. One good illustration of the mischief thus worked in the case of a physician who, when he reached his garage found his rear tires flat. Closer inspection revealed that little steel barbs to the number of fifty-eight had entered the tires.

Development Briefs

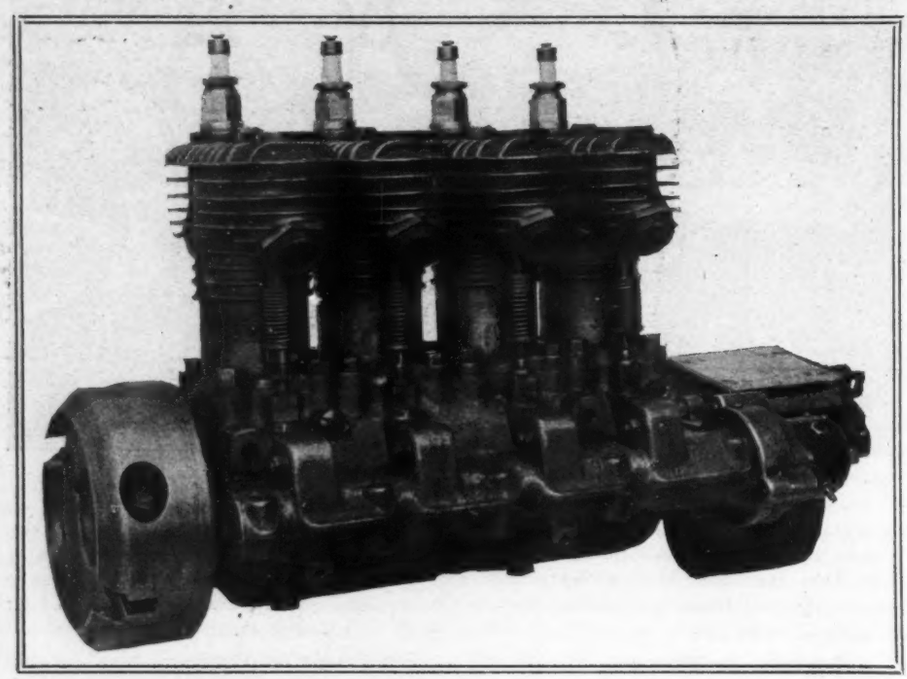


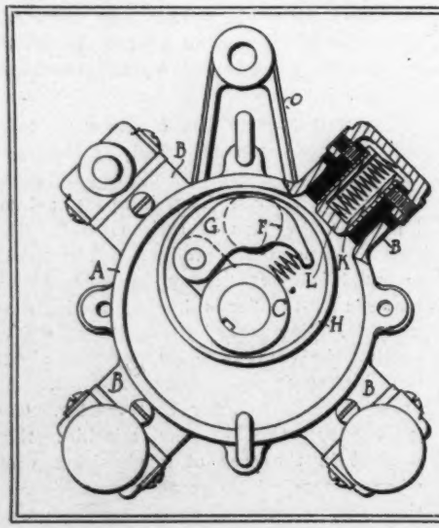
PLANCHE MOTOR—SMALLEST OF FOUR-CYLINDER MOTORS

PLANCHE FOUR-CYLINDER MOTOR

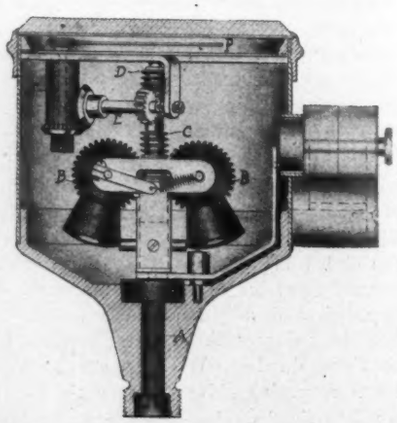
The Motor Car Specialty Co., Trenton, N. J., is marketing the Planche four-cylinder air-cooled motor, which is looked upon as one of the smallest machines of its type manufactured in this country. It has been designed specially for motor cycle work and has cylinders 2 1/16 inches in diameter with a 2¼-inch stroke. These cylinders are separate castings with opposite mechanically-operated valves, the valves having nickel steel heads and carbon steel stems. Cooling of the cylinders is by integral horizontal flanges surrounding the walls and valve ports and longitudinal vertical flanges for the cylinder heads. Both cylinders and pistons are finished by a grinding process. In the crankshaft, which is of the five-bearing type, forty-carbon steel is used, the shaft being hardened and finished by grinding. It revolves in plain cast iron bearings. The camshafts, of which there are two, are hardened throughout their entire length and run in cast iron bearings. Connecting rods are drop forgings with bronze bushings at both ends. This hardening and grinding story of the motor could be continued to its many other parts. Fitted to it for ignition purposes is a Simms-Bosch magneto located upside down at the front end and gear-driven. With this ignition these motors have been driven at a crankshaft speed of 3,500 revolutions per minute, but the motor gives its rating of 6-horsepower at a speed of 2,000 revolutions per minute. So great has been the aim of cutting down weight, and in spite of its separately-cast cylinders, the entire motor, complete, without magneto, weighs but 54 pounds.

IMPROVED F & S BEARINGS

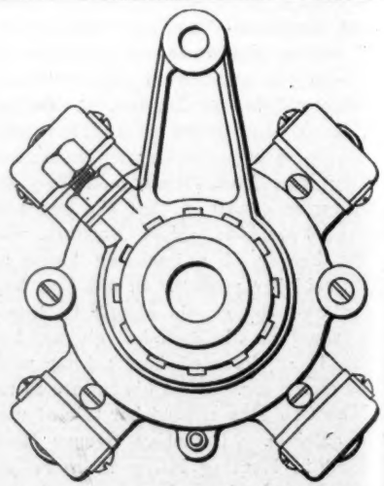
The J. S. Bretz Co., New York city, importer of the F & S ball bearing, made by Fichtel & Sachs, Schweinfurt, Germany, announces improvements in the 1909 bearings which consists chiefly in the new type of seperator used to carry the balls, which separator allows of nearly filling the entire annular space between the outer and inner ball races with ball. The carrier A is die cast of special alloy and made in halves B and BI, in the opposing faces of which halves are semi-circular openings for containing the balls. The halves are anchored together by brass wires C of dovetail section, which are inserted in dovetailed shaped grooves and have their ends clinched over into notches in the side of the separators. Readers of Motor Age are aware that in an annular ball bearing of this type the balls are carried between the inner and outer retaining races D and E. In the F & S bearing a characteristic feature is the method of entering the balls between these races, this method being to form angular entering grooves in the sides of the races D and E. The bearing is half filled with balls before these entering grooves are needed by placing the races D and E eccentrics to each other. When half full the remainder of the balls are entered by the angular entering grooves, which grooves are not quite so deep as the grooves DI and EI of the races D and E; consequently the balls are sprung in under some pressure. Once in the balls do not touch the entering grooves.



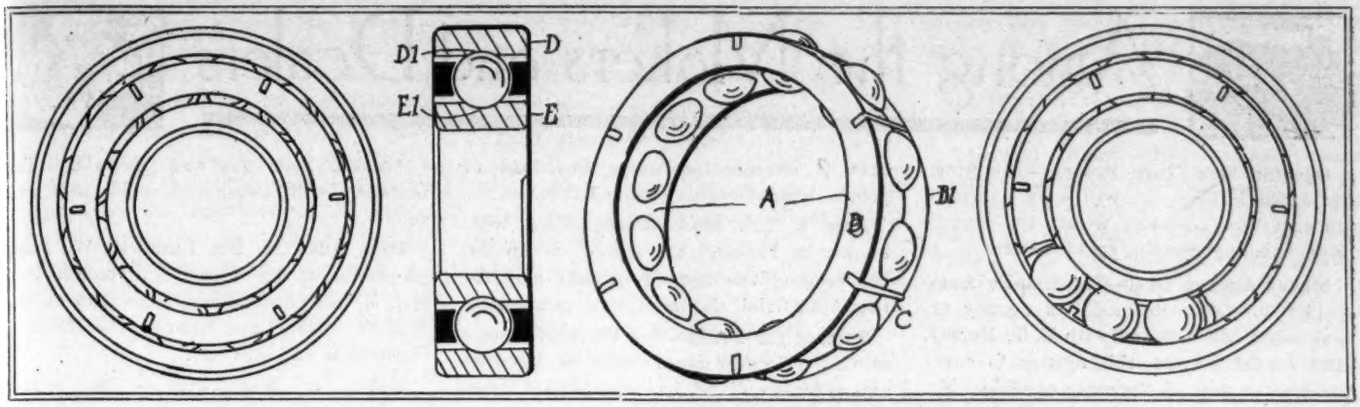
WICO COMMUTATOR CONSTRUCTION



STANDARD SPEEDOMETER



WICO COMMUTATOR CASING



SHOWING DESIGN AND IMPROVEMENTS IN F & S BEARINGS FOR 1909

In assembling a bearing the requisite number of balls are put in, after which one-half of the separator is positioned, then the other half and finally the anchoring wires for holding the halves of the separator together.

STANDARD SPEEDOMETER

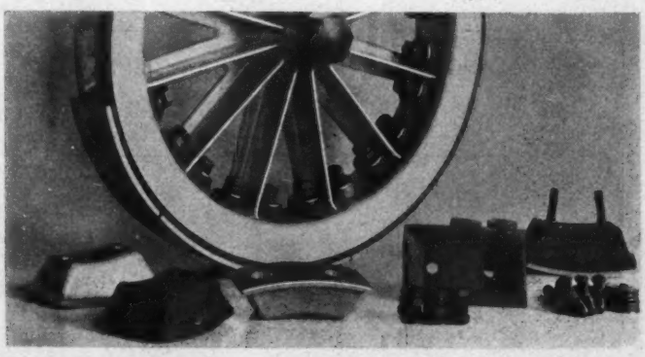
The Parker Mfg. Co., of Boston, Mass., manufacturers in sizes with 3 and 4-inch dials the Standard speedometers with combined odometer, the design being such as to give a steady reading and accurate action. Drive from the car wheel by a flexible shaft passes through the vertical shaft A of the instrument on which shaft are the opposing governor weights carried on gears B that mesh with a rack on the revolving shaft so that as the weights are thrown outward by centrifugal force the rack is lowered. Higher on the spindle is a circular rack D, with which meshes a gear on the cross shaft E, which in turn drives the vertical spindle F carrying the pointer P, which shows the speed in miles per hour. The operation is readily understood from this, in that raising the governor weights lowers the racks C and D, imparting a part rotation to the shaft E, which is transferred to the spindle F and pointer P. The gears used are hardened steel running into bronze and the entire revolving part is carried on a ball bearing. This speedometer, owing to the pointer being shifted by gears uses an evenly-spaced dial and does not make use of cams or levers to work the pointer. The movement of the pointer is always in fixed relation to the governor weights, which vary in position according to the speed. The different types are made with 40, 60 and 80-mile per hour dials. The odometer attachments are located in an easily-read position at the right and consist of the usual trip and season parts. The use of regular graduated dial, and dust-proof construction are leading features of the speedometer.

RING AND ROLLER TIMER

The Witherbee Igniter Co., New York City, is making the Wico ring and roller timer for one, two, four and six-cylinder engines. The peculiarity of this timer is that between the stationary contacts for each of the binding posts and the roller in the revolving contact is a brass ring against which the roller always contacts, with the apparent aim of having the roller travel on a smooth surface so that wear on the stationary contacts as well as the revolving one is reduced to a minimum, in that the brass ring which forms the contact between them is invariably stationary in relation to them both. The construction is briefly as follows: The casing casting A has a number of bosses B equally to the number of cylinders in the motor on which the timer is used, each boss containing one of the stationary contacts. The revolving tube C attached to the driving shaft carries through an arm G, the roller contact F, which is within the loose brass ring H. L represents the tool steel plunger of a stationary contact, which is constantly pushed centerward by the spring shown. The contact works in a brass bushing K, which is within the usual insulation thimble. The timer is particularly light, the four-cylinder type weighing 20 ounces and the six-cylinder sizes but 2 ounces more. In advancing the spark the arm O, to which the control linkage attaches, is so slotted as to make the timer adjustable to the varying linkages of the different make of cars.

LEA COMBINATION TRUCK TIRE

Although many attempts have been made to reduce the cost of tire upkeep and heavy trucks, little has been done to produce a tire in which the cushioning action of rubber is utilized but the wear due to the propulsion the car taken on a harder substance. E. S. Lea, Trenton, N. J., has worked along this line, and in his latest combination tire applies the tire to specially-made wheels, in which the hub, spokes and rims are formed in one casting. In the periphery of this casting are twelve radial recesses, each containing a cast-steel shoe fitting in a thick rubber pad. These shoes nowhere contact with the rim, but have a cushioning action of rubber on all sides, and the wear, due to the road and propulsion, is on the face of the shoe. For winter use the shoes may be corrugated, although experiments have shown that the traction is equally good without these corrugations. Two bolts, which pass through the rubber bed and the rim, hold each shoe in position, these bolts being provided with rubber washers to permit of play in every direction, to give freedom of movement to the shoes needed because of road irregularities. Replacements in a tire of this nature are much cheaper than those in a conventional solid rubber tire.



CONSTRUCTION AND DETAILS OF THE LEA COMBINATION TIRE FOR TRUCKS

Among the Makers and Dealers

Opening New York Branch—The Stewart & Clark Mfg. Co. will open a branch office in New York city within the next 10 days, handling Stewart speedometers.

Makes Agency Deal—The Empire Automobile Tire Co. has made an agency arrangement in Cleveland with E. T. Horsey, 1268 Euclid avenue, this agency to cover the greater part of the state of Ohio. Mr. Horsey will operate under the name of the Empire Tire Agency.

Motor Fire Engine—The Independent Hose Co., of Frederick, Md., has in service a motor fire engine and hose wagon. It consists of a standard motor touring car equipment, with a triple pumping engine so geared that it can be used either for propelling the vehicle or operating the pump on the fire ground. The machine has three powerful streams of from 125 to 150 pounds. The engine will throw 450 to 550 gallons of water a minute against a head of 250 to 350 feet.

Ohio Venture a Success—That it is best to give good service for transportation purposes is shown by the success of the Cortland Transfer Co., which started a motor bus line between Cortland, O., and Warren, O., about August 20. The first 10 days of the service the twenty-passenger bus averaged 155 fares per day, the single fare being 25 cents. The patronage is reported to be so great that the company already has secured another bus which will be put into use this week. The first bus makes five trips per day each way and costs, it is said, to operate it, $5 per day. There is now talk of another company being established in Warren to run a counter bus line from that end of the route. The 8-mile ride over the pike road is one of the prettiest in that part of Ohio and the Erie railroad is so agitated over the success of this venture that it is counting every bus load of people which leaves Cortland.

Kier a Tire Man—Joseph Kier, well-known in Philadelphia motor car circles, has secured the agency in that city for the Ajax-Grieb Rubber Co.'s products.

Breezes for Fords—The Breeze Carbureter Co., owing to the number of inquiries and orders received, has adapted its latest model to the Ford cars, so it can be put on without further machining or trouble of any kind. A few special kinks accompany the new style carbureter.

Baltimore's First Taxicab—The first taxicab for Baltimore was given a trial trip through the city's streets last week. Eighteen more of these machines, which have been ordered by the Motor Car Co., will arrive this week and the regular runs of these machines will be started. These cabs will be operated by the Baltimore Taxicab Co.

Will Handle Havoline Oils—T. E. Tomlinson, secretary and general manager of the Havoline Oil Co., has just returned from California and reports having made arrangements with W. P. Fuller & Co., of San Francisco, to take the agency for Havoline oils on the Pacific coast and in the Hawaiian islands. W. P. Fuller & Co. have fifteen branch stores.

Rathbun's New Vocation—Fred D. Rathbun, formerly New England traveling representative of the Studebaker company, has entered the service of the Electric Vehicle Co. Mr. Rathbun represents certain interests that will shortly erect a large garage in the residential district, on Farmington avenue and Owen street at Hartford. The building will be completed about January 1. It will be fireproof in construction, two stories in height with fully equipped repair shop. Among cars that will be sold will be the Columbia, both gas and electric. The building will occupy a plot 150 feet square.

Dart Adds to His Line—F. W. Dart, proprietor of the Palace Automobile Station, of Hartford, Conn., has taken on the E-M-F. Mr. Dart handles the Thomas, Oldsmobile and Autocar.

E-M-F in Washington — The E-M-F agency in Washington, D. C., has been given to the Commercial Automobile and Supply Co., which formerly handled the Wayne. Manager Long spent the first week in September at the factory and contracted for a large number of cars.

Want Marvel Plant—Citizens of Elkhart, Ind., are trying to get the plant of the Marvel Automobile Co., now located at Detroit, Mich. It is understood that the company has been made an attractive offer to move and now has the offer under consideration. It is believed some definite action will be taken within the next few days.

Morrow Goes to New York—George Morrow, sales manager of the Spare Motor Wheel of America, Ltd., will leave Chicago within a few days for New York, where he has been appointed the task of opening up a branch office for the sale of the Stepney wheel. Heretofore the Spare Wheel of America, Ltd., has been represented in New York by agents, but now has found it necessary to open up a branch office in order to be the better able to take care of their rapidly increasing business.

Moves to Chicago Row—Motor row in Chicago is to have an addition in the shape of a three-story building for the Chalmers-Detroit representative, the Levy & Hipple Motor Co., now at 390 Wabash avenue. Plans have just been perfected by this company for a building 42 by 162 feet. The structure will be white tile. There will be a runway, opening on Michigan avenue and leading back to the garage in the rear. The upper floors will be used for store rooms, machine shop and stock rooms.

Big Fire in Boston—A most disastrous fire in which Boston motorists were interested broke out early Sunday morning in the Taylor-Palmer garage, 173 Huntington avenue, and completely gutted the building and burned up the contents, some 100 motor cars. The total loss is estimated at about $400,000. The fire started in the basement from some unknown cause and quickly spread to the first floor. An explosion of gasoline spread the flames and there was little time to do anything. The employes managed to get out four of the cars, but all the others on the first, second and third floors were destroyed.

INDIANAPOLIS MOTOR CAR CO.'S GARAGE FOR COMMERCIAL CARS ONLY

The building was a new one and was opened a year ago. Its location made it popular with residents of the Back Bay and the garage did a very good business.

Rutz Changes—William A Rutz, formerly New England traveling representative of the Continental Caoutchouc Co., has joined the New Departure Co., of Bristol, and will cover the western territory.

David Sells Out—W. C. Longstreth, who with W. P. David owned and operated the Kelsey Motor Car Co., Philadelphia representative of the Maxwell, has bought out the latter's interest, and will hereafter be the sole agent for that car in the Quaker City. Mr. David has not yet announced his future plans.

Hysan Buys Luttrell Business—L. V. Hysan has succeeded to the garage business of the Luttrell Co., 1711-13 Fourteenth street, Washington, D. C. He has renamed it the Belmont garage. S. A. Luttrell and J. A. Muehleisen, who compose the Luttrell Co., will continue to handle the Packard and Buick, and will secure a salesroom in the downtown section of Washington.

Seymour Starts In—With $30,000 capital, the Southern Indiana Auto Co. was launched at Seymour, Ind., last week and will establish a garage and sales room and later may engage in the manufacturing business. Members of the company are Harley Jackson, William R. Masters and Fred Everback, and arrangements are being made for agencies for next season.

Mitchell Park Planned—The Mitchell Motor Car Co., of Racine, Wis., is laying out a beautiful park on the site of one of its oldest buildings. It will be a breathing spot for its employes, but not restricted to them. The park takes in the triangle at Sixth street, Grand avenue and Washington avenue.

Ready for Truck Trade—Alvan T. Fuller, Boston agent of the Packard, has received two of the Packard trucks built with solid steel wheels. One of these has been delivered to a big furniture house in Boston and the other will be used for demonstrating. Mr. Fuller is going to begin an active campaign to introduce commercial vehicles in his section of New England as well as pleasure cars.

Palace Posters Adopted—At a 2-day meeting of the show committee of the Grand Central palace show a final selection was made of the posters to be used for the exhibition, while the plans for decorating were cut down to two designs. Within a week or so the final decorative scheme to be carried out in the next big affair in the palace will be decided upon. Of the two posters adopted, one will be in seven colors and the other in five, and both are said by those who have seen the originals to be entirely new in the line of show publicity. Space applications and diagrams have been sent from the office of the American Motor Car Manufacturers' Association, and early returns indicate a demand that will far exceed the 78,000 square feet of space available in the palace this year, under the new space arrangements.

C. B. Hayes at Head—C. B. Hayes has resigned as manager of the Imperial Wheel Co., of Flint, Mich., and now is at the head of the National Wheel Co., of Jackson, Mich.

New Hoosier Concern—The Motor Car Sales Co. was organized at Indianapolis last week with $25,000 capital and will become distributing agents for the Studebaker and E-M-F lines in Indiana, with headquarters with the Willis-Haywood-Holcomb Co., 330 North Illinois street. Members of the company are B. W. Twyman, who has been with the Gibson Automobile Co. for some time; C. C. Hauger, clothing merchant, and C. O. Britton, attorney. Mr. Twyman will have active charge of the business, which will be supplying Indiana agents outside of Indianapolis. The Indianapolis trade will be looked after by the newly organized Willis-Haywood-Holcomb Co., which already has the agency for the Packard.

Garage for Commercial Cars—The Indianapolis Motor Car Co., Indianapolis, recently moved into its new building at 419-423 East Market street and now not only has the only garage in Indiana devoted exclusively to commercial vehicles, but one of the largest in the country. Since it was organized about 18 months ago the company has handled the Rapid line and has placed about thirty of the trucks, delivery wagons and one sightseeing car in Indianapolis, besides a large number throughout the state. The new building is a three-story structure, modern in every particular. All cars sold in Indianapolis are sold on a maintenance contract, whereby the company agrees for a certain amount each month to keep the car continually in service. If it should break down, an emergency car is sent immediately to take the load and finish the day's work, or continue in service until repairs are made. This is the only company in Indianapolis selling commercial vehicles exclusively. W. W. Reagan, who recently took the agency for the Haynes, has his headquarters in the building.

Maxwell Plans—The Maxwell-Briscoe company expects to have its 1908 output complete October 1 at its Newcastle plant, when it will begin work on the 1909 models. At that time the working force will likely be largely increased, as the company expects to turn out 10,000 cars at its Maxwell plant during 1909. Additions to accommodate the increased output have been erected.

Bus Lines Popular—Motor bus lines are multiplying in upper Michigan, and plans are being made for a far-reaching interurban service between towns in the vicinity of Houghton, Hancock and other towns. The Twin City Motor Co. has been organized by Houghton and Hancock men, with a capital stock of $50,000, to operate a line of motor cars between Houghton and Hancock, and from those two cities to towns in the vicinity. The Calumet-Laurium Motor Co., capitalized at $20,000, was incorporated recently and opened a bus service between Red Jacket and Laurium, a distance of 1½ miles. The service has demanded more cars.

Pittsburgers Choose Officers—The Automobile Dealers' Association, of Pittsburg, has elected the following officers for this year: President, W. N. Murray; vice-president, A. L. Banker; secretary, Charles F. McLaughlin; treasurer, H. P. Moore. The following concerns now belong to the association: Diamond Automobile Co., Maxwell-Briscoe Co., White Steamer Co., Arlington Motor Car Co., Allegheny Automobile Co., Bellefield Motor Co., Belden Motor Car Co., Banker Brothers Co., Colonial Automobile Co., Diamond Automobile Co., Fort Pitt Automobile Co., Hiland Automobile Co., Iams Motor Co., Keystone Automobile Co., Standard Automobile Co., Winton Motor Car Co., Wilkinsburg Auto Garage and Union Auto Repair Co.

INTERIOR OF COMMERCIAL CAR GARAGE IN INDIANAPOLIS

Brief Business Announcements

St. Augustine, Fla.—A new garage and repair shop is in process of erection on Granada street.

New Albany, Ind.—A company has been organized to run a motor bus line between Greensburg, Napoleon and Osgood, Ind.

Jackson, Cal.—J. L. Allen and Leo Young are planning to establish a motor stage between this town and Sacramento.

Wilmington, Del. — The International Auto Cab Co., of Dover, has been incorporated with a capital stock of $500,000.

Lynn, Mass.—Magee & Kost have opened a new garage at the lower end of Commercial street, in one of J. C. Bennett's buildings.

Newport, R. I.—P. F. Conroy has been appointed local agent for the Stevens-Duryea. He will open his headquarters on Bellevue avenue.

Philadelphia, Pa.—M. R. Greene has been appointed manager of the branch of the White company on North Broad street. The building has recently been improved.

Boston, Mass.—H. W. Lincoln, formerly connected with Alvin T. Fuller, of the Motor Mart, is now associated with the sales department of the local Studebaker branch.

Grand Rapids, Mich.—The Miller Auto Motor Mfg. Co., of 274 West Bridge street, has commenced the manufacture of gas engines under a patent recently obtained by President Miller.

Topeka, Kan.—Roy Crawford has bought the agency for the Ford from Mr. Cowdrey, of the Cowdrey Auto Co. In the future Mr. Cowdrey will devote his entire attention to his garage business.

Warren, Ohio—A company has been organized to run a motor bus line between this city and Cortland on the pile road which runs parallel with the Erie railroad. Five trips a day are to be made. Arrangements are also being made to carry light freight and deliver packages.

Newark, N. J.—Russell E. Gilliam, who has been acting as manager of the Empire Tire and Supply Co., has severed his connection with that concern. He has been appointed manager of the new local branch of the Empire Tire Co., of Trenton, which is to establish headquarters at 264 Halsey street.

Calumet, Mich.—The Calumet-Laurium Motor Co., which was organized about a month ago to operate a motor bus line between Red Jacket, Calumet and Laurium, has been obliged to increase its capital stock from $20,000 to $30,000. The line is being run in opposition to the Houghton county street railway. Another bus line has been organized here to be known as the Twin City Motor Co., and will operate between Houghton and Hancock. This latter concern, it is announced, has a capital stock of $50,000.

New York—Judge Adams has appointed Robert A. Inch receiver for Van's Auto Tire Co., of 729 Seventh avenue.

Pittsburg, Pa.—The Iron City Tire and Repair Co. has taken quarters in the Banker Building, Beatty and Baum streets, East End.

Pittsburg, Pa.—The Union Auto Repair Co. is erecting a new garage on Collins avenue to be run in connection with its Penn avenue shops.

Newark, N. J.—Alexander Ostler has withdrawn from the Hydro-Carbon Machine Co. and in the future will be associated with C. W. Nichols at 290 Halsey street.

Philadelphia, Pa.—The Roman Automobile Co. has opened a warehouse, repair and paint shop at 1738 Ludlow street, in the rear of its premises at 1740-42 Market street.

Los Angeles, Cal.—Norman W. Church, local agent for the Stoddard-Dayton car, is preparing to erect a garage and repair shop on Olive street. The exact location has not yet been decided upon.

Detroit, Mich.—The J. H. Brady Auto Co. has leased for a term of years the Stevens property on Woodward avenue, and John Scott & Co., the architects, are preparing plans for a first class garage.

Jersey City, N. J.—The Crescent Automobile Co., of 3567 Boulevard, has been appointed exclusive agent in Hudson county for the Peerless. The company already has the agencies for the Pope-Hartford and the Cadillac, and will continue to represent these machines.

Riverhead, L. I.—A motor bus stage route is to be established to Quogue over the new stone road, to be run by W. H. Robertson, of Brooklyn. The cars are to be run on a regular schedule, and the service will commence as soon as the road is finished, which will probably be in October.

New Albany, Ind.—A motor car service is to be started on the Southern railroad between Louisville and Corydon Junction. The cars are to be operated by gasoline and will have a capacity of twenty passengers. Two cars a day will be operated and possibly the service will be extended to Corydon, the old state capital.

Detroit, Mich.—A change has been made in the local branch of the Maxwell-Briscoe company. Alex McLeod, who has been acting as manager for some time, has been appointed district manager for the company for the states of Michigan, Ohio and Kentucky, while his place as local manager will be taken by Robert K. Davis, who has been Mr. McLeod's assistant for so long. It has also been decided to handle the Maxwell car exclusively.

Albany, N. Y.—The Auto Underwriters' Association, of New York City, has been incorporated with a capital stock of $10,000.

Newark, N. J.—Plans have been filed for the erection of a concrete motor garage to be built at 108 High street for Isaac H. Blanchard.

New York—It has been announced that the capital stock of the Franco-American Taximeter Co. has been increased from $1,050,000 to $1,500,000.

Newark, N. J.—W. G. Vey, who has been conducting a garage at 290 Halsey street, is to remove to 327 Broad street, where he will manage the North End garage.

New York—William Cadzow, formerly connected with Wyckoff, Church & Partridge, is now associated with Rose & Thomson, the proprietors of the Yonkers motor station.

Philadelphia, Pa.—The General Motor Car Co., local agent for the Lozier car, has removed from 249 North Broad street to 227-229 North Broad, which building was erected specially for the company.

Philadelphia, Pa.—Andrew S. Robinson, formerly associated with the Harry S. Houpt Co., of New York, has been appointed sales manager for the Hamilton Auto Co., local agent for the Stoddard-Dayton.

Milwaukee, Wis.—Richard J. Penney and J. J. Richards have formed a partnership and will open a garage at 312 West North avenue. A feature of the new establishment will be a livery with day and night service.

Jackson, Tenn.—The Southern Motor Co., which was recently organized, is about to go into the manufacture of cars. The machinery has already been purchased and plans are under way for the enlargement of the present building to twice its present capacity.

Atlanta, Ga.—Frank C. Steinhauer, who has been conducting a garage at 56 Edgewood avenue, has bought out the American Motor Car Co., and in the future will conduct that business. Mr. Steinhauer has been acting as agent for the Packard and Pope-Hartford for the past several years, and will continue to represent these cars.

Detroit, Mich.—M. S. Brigham, who has been acting as manager of the retail department of the Cadillac Motor Car Co., is preparing to go into business for himself. He has secured the exclusive right for the sale of the Cadillac in the state of Washington, and is about to establish headquarters in Seattle.